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Reuben, Mark S.
Reynolds, Harry S.
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Sammis, Jesse F.
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Shapiro, Louis L.
Shaw, Henry L. K.
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Smith, Arthur L.
Smith, Richard M.
Sobel, Jacob
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Wall, Joseph S.
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INDEX TO VOLUME XXXVI.

A baby aristocracy 506
Abcess of the lung in children.. 427
Absence of clavicles.. 567
Acetonuria and cyclic vomiting in children. Kerley................. 472
Acetonuria in children, the occurrence of, Garland.................. 469
Acidosis in children.. 685
Acrocephaly with deformities of the extremities....................... 367
Acute mastoiditis, sinus thromboses, and bacteriemia with recovery, case of 121
Acute otitis media and subsequent mastoid operation, is the present frequency of, in some measure a reproach to pediatrics? Southworth 65
Adiposity, cerebral versus lacteal. Reuben.............................. 636
Alkalinization of infants' food, the deleterious effect of the........ 410
American Pediatric Society, detailed report of the 31st annual meeting, with full abstracts of all papers read........................ 325
Anaphylactic shock, acute, slow intravenous injection to prevent...... 53
Anaphylactic death of asthmatics.. 651
Anemia, aplastic, a case of.. 190
Anesthesia, local, in children 127
Aneurysm of the ascending arch of the aorta in a boy of thirteen. Heiman 543
Anomaly of the diaphragm with a gastric and intestinal obstruction, a case of.. 360
Appendicitis in children 512
Appendicitis in children. Farr.. 207
Appendicitis in children, the diagnosis of.............................. 502
Appendicitis, medical treatment of...................................... 314
Artificial pneumothorax in tuberculous pneumonia...................... 476
Ataxias of childhood. Seham.. 531
Atropin test, the 71
Athreptic infants, the artificial feeding of.............................. 405
Bacillus influenzae and present epidemic 44
Barnett, Nathaniel. Masking an entire school to prevent the spread of influenza 83
Berg, Henry W. Hyperpigmented as contradistinguished from hemorrhagic measles 619
Berghausen, Oscar. Control of hemorrhage in the new born........ 643
Birth control in relation to child welfare................................ 503
Bleeding in certain diseases of the blood, the arrest of.............. 602
Blood transfusion 601
Blood transfusion without a chill by the syringe-canula system—214 consecutive cases 497
Blood in children, chemical examination of the........................ 440
Bloom, Charles James. Vaccine therapy—the most rational and effective method of treating whooping cough 1
Bone syphilis, the value of the x-ray diagnosis of.................... 604

Book reviews....318, 511
Breast milk, re-establishment and development of. Moore.... 609
Bronchoscopic and esophageal cases, five recent 120
Bronchiectasis, fetal 684
Brown, H. O. The eruption of the teeth and subsequent development of the jaw.... 284
Calculus, a case of.... 359
Calomel inunctions 642
Carbon dioxid tension of alveolar air and the hydrogen-ion concentration of the urine, comparison of the, with the bicarbonate of the blood plasma 509
Carotinemia: a new clinical picture.... 689
Carr, Walter Lester. Floyd M. Crandall, an appreciation 513
Cathartics and laxatives in infancy and childhood, the abuse of.... 441
Cereal feedings, thick, in twelve cases of malnutrition in infancy, with report of two typical cases. Mixsell.... 449
Cerebrospinal meningitis, early diagnosis of, by examination of stained blood films 118
Cerebrospinal fluid of acute disease, observations on the.... 415
Cerebrospinal involvement in hereditary syphilis.... 350
Cerebrospinal meningitis, the cause of a "sporadic" case of.... 348
Chapin, Henry Dwight. Preliminary report on the use of vegetable milk in children 28
Child, the, and the State. Shaw.... 456
Child welfare work in Massachusetts. Smith.... 646
Children's Bureau of the American Red Cross in Lyons, France, the work of 403
Children's year, the results of. Rude.... 652
Cholesterol metabolism of infants, a study of the.... 338
Chorea, magnesium sulphate in treatment of.... 635
Chorea, treatment of, according to Marinescu.... 691
Chorea and hereditary syphilis.... 62
Chorea, auto-serum treatment of.... 59
Chronic pancreatitis 164
Chronic tonsil infections 571
Clinical examinations a necessity. Levy.... 576
Congenital double facial paralysis, a case of, accompanied by absence of lateral movements of the eyeballs, mandible and tongue.... 61
Congenital edema 245
Congenital malformation of the left forearm with absence of the hand 246
Congenital malformation of the spine 256
Congenital ptosis, a case of 59
Congenital syphilis, prevention of, by antisyphilitic prenatal therapy.. 101
Congenital disseminated atelectasis with x-ray findings.... 358
Congenital syphilis, a study of a foundling institution to determine the existence of.... 447
Contagious disease, the care of children after.... 47
Convulsions in infancy and childhood, a study of the relationship of, to epilepsy 331
Crandall, Floyd M. Abraham Jacobi, an appreciation.... 321

Crandall, Floyd M.—an appreciation. Carr.......................... 513
Cretinism, an unusual case of. Kerley.......................... 465
Cutaneous hypersensitiveness, certain aspects of...................... 334
Dearborn, George Van Ness. The fretfulness of children........... 228
Defectives, the basic procedure in an educational system, with special reference to the deaf. Wright.............................. 572
Dental infections in children. Smith............................ 148
Dermoid cysts 683
Dextrose tolerance in atrophic infants 381
Diarrheal diseases of infancy, the etiology and treatment of.......... 496
Diet of negro mothers.. 542
Difficult children, the diagnosis of, the relation of physical and mental factors in. Groszmann 563
Diphtheria, active immunization of infants against................... 117
Diphtheria, the heart in.. 147
Diplopia after lumbar puncture.. 314
Do calories measure the true value of foods?....................... 372
Eating 254
Eczema from a dermatological point of view. MacKee............... 221
Edema of the brain in infectious diseases 51
Edema without albuminuria in infancy............................ 56
Education of the organic functions in infancy........................483
Encephalitis lethargica. Neal 293
Encephalitis lethargica, some recent cases of......................... 500
Encephalitis, postinfluenzal 346
Energy metabolism, the, from birth to puberty....................... 344
Eruption, the, of the teeth, and subsequent development of the jaw. Brown 284
Farnell, Frederic J. Early nervous and mental signs in school children 549
Farr, Charles E. Appendicitis in children 207
Fat metabolism, a study of the, of infants and young children. I. Fat in the stools of breast fed infants 507
Feeblemindedness, is it always an hereditary disorder? Levy........ 558
Feeding of children after the first year 605
First aid to the infant. Sobel....................................... 85
Fluoroscopy of the cerebral ventricles............................. 317
Focal infections, the significance of................................. 692
Food and disease in infants, the connection between................ 687
Food, the influence of, upon development. Van der Bogert........... 625
Foreign bodies in the trachea, bronchi and esophagus, some recent cases of 384
Foreign bodies in the air and food passages......................... 325
Fracture of the cervix femoris in children 118
Fretfulness of children, the. Dearborn.............................. 228
Garland, John. The occurrence of acetonuria in children............ 469
Gastrointestinal abnormalities, a few roentgenograms demonstrating.. 366
Gastrointestinal hemorrhage in the newly born...................... 530
Glandular enlargements in children, the significance of............... 307
Glucose, the subcutaneous and intravenous administration of solutions of. Lyon 161

Gonococcal peritonitis in young girls under puberty, two cases of. Northrup ... 475

Gordon, Murray B., and Bartley, Elias H. Malnutrition in children—a study of the examination of 900 children under eight years of age ... 257

Groszmann, Maximilian P. E. The relation of physical and mental factors in the diagnosis of difficult children ... 563

Growth in infancy and childhood, some factors influencing ... 505

Haas, Sidney V. The atropin treatment of pylorospasm and pyloric stenosis ... 516

Health study in a boys' school ... 351

Heiman, Henry. Aneurysm of the ascending arch of the aorta in a boy of thirteen ... 543

Heiman, Henry. The complement fixation test for tuberculosis in infancy and childhood ... 32

Hemorrhage of the new born—blood transfusion via the longitudinal sinus—recovery ... 498

Hemorrhage in the new born, control of. Berghausen ... 643

Hemangioendothelio-sarcoma of the liver—a disease of early life ... 414

Hepatoma in an infant, report of a case of. Wollstein and Mixsell .. 268

Herpes zoster and varicella ... 607

Human milk, an analysis of, the technique of obtaining samples and the interpretation of results ... 443

Hymenolepis nana infestion, the occurrence of, in an institution for children. Narr ... 639

Hypertrophic pyloric obstructions in infants, a retrospect of fifteen years' experience in the treatment of. Porter ... 385

Hypertrophic stenosis of the pylorus in private practice, twenty-six cases of, with operation by the Rammstedt method ... 55

Infantile or spinal paralysis ... 604

Influenzal meningitis, a case of. Johnson ... 82

Influenza and bronchopneumonia in children. Smith ... 214

Influenza epidemic, pediatric notes on ... 251

Influenza in children, review of the literature on. Moffett ... 578

Influenza in infants ... 608

Influenza, masking an entire school to prevent spread of. Barnett ... 83

Influenza and influenza pneumonia, a comparative study of the early and late secondary complications, as seen in the army, with those of infants and children in civil practice ... 425

Influenza in infants, epidemic ... 688

Insusceptibility of monkeys to inoculation with blood from measles patients ... 124

Intestinal parasitic infection, study of the stools of institutional children to determine the existence of ... 376

Intra-uterine fractures ... 36

Intraspinous injections of magnesium sulphate in severe chorea ... 506

Intravenous injections in infancy—advantages of the superior longitudinal sinus route. Tarr ... 72

Intussusception, change of color in the diagnosis of ... 62

Intussusception, oil enemata in........ 485
Jacobi, Abraham—an appreciation. Crandall........ 321
Johnson, Charles Kimball. A case of influenzal meningitis........ 82
Juvenile paretic 548
Keller, Eleanor I. Mental as well as physical therapy for children... 277
Kerley, Charles Gilmore. An unusual case of cretinism........ 465
Kerley, James Hoyt. Acetonuria and cyclic vomiting in children..... 472
Kidney, autotransplantation of........ 645
Lethargic encephalitis 45
Leukemia, acute 84
Levy, Julius. Is feeblemindedness always an hereditary disorder?.... 558
Levy, Samuel D. Clinical examinations a necessity........ 576
Longitudinal sinus, the—its adaptability in procuring blood for diagnosis—its use in transfusion of blood, and for diagnostic purposes—an ideal method in infancy........ 315
Lumbar puncture in children, some points relative to the technique of. Regan 129
Lyon, G. The subcutaneous and intravenous administration of solutions of glucose 161
Mammary glands, faradization of the, as a galactagogue........ 189
MacKee, George M. Eczema from a dermatological point of view.... 221
Malnutrition in children—a study of the examination of 900 children under eight years of age. Gordon & Bartley........ 257
Mastoid antrum infection, acute, in infants........ 685
Mastoiditis in infants without otorrhea........ 618
Maxfield, Francis N. The clinical method in the mental examination of school children 568
McCready, E. Bosworth. Nervous and unstable children........ 552
Measles, immunization against 248
Measles, hyperpigmented as contradistinguished from hemorrhagic. Berg 619
Meningococci purpuric elements of meningococcal, presence of....... 598
Meningococcic meningitis, the intensive treatment of........ 606
Meningeal hemorrhage, coli infection and hydrocephalus in a newborn infant 63
Mental as well as physical therapy for children. Keller........ 277
Mental examination of school children, the clinical method in. Maxfield 568
Migration of a round worm into the ear........ 289
Milk mixtures 27
Mixsell, Harold R. Thick cereal feedings in twelve cases of malnutrition in infancy, with report of two typical cases........ 449
Moffett, Rudolph Duryea. Review of the literature on influenza in children 578
Moore, C. Ulysses. Re-establishment and development of breast milk. 609
Muckenfuss, A. M. The excretion of the vitamines........ 82
Multiple cutaneous staphylococcal abscesses in infancy........ 296
Mumps, the cerebral complications of........ 601
Muscular spasm in a child, a case of........ 188

Narr, Frederick C. The occurrence of hymenolepis nana infestion in an institution for children........ 639
Neal, Josephine B. Encephalitis lethargica........ 293
Nephritis in childhood, acute........ 690
Nervous and unstable children. McCready........ 552
Nervous and mental signs, early, in school children. Farnell........ 549
Nervous child, the, and his management........ 445
New York Academy of Medicine, Section on Pediatrics..102, 165, 234, 669
Northrup, W. P. Two cases of gonoccocal peritonitis in young girls under puberty........ 475
Nutrition class, Cornell, report of the. Wilson........ 37
Nutritional disorders in infants, certain, associated with a proteolytic intestinal flora........ 339
Nutritional disorders, the pathogenesis of certain........ 328
Osteogenesis imperfecta-congenita........ 369
Park, William H. The Schick reaction and its practical applications.. 301
Park, William H. The serum treatment of lobar pneumonia........ 490
Pediatrician, the, at home during the war........ 401
Perthes' disease—review of literature and illustration of one case.... 248
Pertussis treated with vaccines, fifty-one cases of. Reynolds........ 290
Pertussis vaccine, results from........ 58
Phenol excretion in the urine of infants, including the new-born...... 153
Pica with unique complications, report of a case of........ 310
Pleurisy, open puncture in........ 482
Pneumococcus in lobar pneumonia, types of........ 599
Pneumonia, lobar, the serum treatment of. Park........ 490
Pneumonia in infancy and childhood without physical signs........ 423
Porter, Langley. A retrospect of fifteen years' experience in the treatment of hypertrophic pyloric obstructions........ 385
Premature child in the home, the care of the........ 312
Premature infant, the care and feeding of the........ 244
Preventive orthodontia in early childhood and the management of children........ 309
Protein intoxication, further experiments on the influence of, on tuberculous infection in guinea pigs........ 498
Pseudocoalgia following traumatic dislocation of the hip in a boy aged four years........ 54
Pyelitis, two cases of, and suppression of the urine for four days, a case of........ 364
Pyloric stenosis........ 79
Pyloric stenosis, diagnosis of congenital hypertrophic, and pylorospasm. Tarr........ 154
Pyloric stenosis of infancy. Wall........ 193
Pylorospasm and pyloric stenosis, the atropin treatment of. Haas.... 516
Pylorus, acute occlusion of the........ 638
Rectal disease in infancy and childhood, conditions which affect the occurrence of........ 501
Recurrent functional micropsia, note on........ 192
Re-education of blinded soldiers........ 562

Regan, Joseph C. Some points relative to the technique of lumbar puncture in children ... 129
Relief work in France ... 412
Reuben, Mark S. Cerebral versus lacteal adiposity ... 636
Reynolds, Harry S. Fifty-one cases of pertussis treated with vaccines 290
Rheumatic nodules in children, the incidence and significance of the.. 368
Rude, Anna E. The results of children's year ... 652
Rumination, observations on a case of, with suggestions as to treatment 508
Rupture of an aortic aneurysm in a child ... 119
Salts in green vegetables ... 213
Sammis, Jesse F. A case of scurvy with cerebral hemorrhage ... 274
Scarlet fever, quarantine and disinfection in ... 334
Schick reaction, the, and its practical applications. Park ... 301
Scorbutic hematuria, a case of ... 358
Scurvy and lemon juice ... 252
Scurvy VIII.—factors affecting the antiscorbutic value of foods ... 316
Scurvy with cerebral hemorrhage, a case of. Sammis ... 274
Scurvy, the prevention of ... 684
Seborrheic eczema in early life, the predominance of ... 356
Section on Diseases of Children, American Medical Association, seventieth annual session—special detailed report, with full abstracts of all papers read ... 398
Seham, M. Ataxias of childhood ... 531
Serodiagnosis of inherited syphilis ... 512
Serum treatment of postinfluenzal bronchopneumonia ... 49
Shaw, Henry L. K. The child and the State ... 456
Smallpox, transmission of, to fetus ... 455
Smith, Archibald D. Influenza and bronchopneumonia in children ... 214
Smith, Arthur L. Dental infections in children ... 148
Smith, Richard M. Child welfare work in Massachusetts ... 646
Sobel, Jacob. First aid to the infant ... 85
Sodium citrate transfusions ... 57
Some phases of the new children's code of interest to physicians ... 502
Southworth, Thomas S. Is the present frequency of acute otitis media and subsequent mastoid operation in some measure a reproach to pediatrics? ... 65
Spasmophilia and infantile convulsions ... 123
Spinal fluid, the, in epilepsy—a preliminary report ... 187
Spinal fluid, quantitative and qualitative changes in the, and their significance ... 417
Splenomegaly, Gaucher type of ... 53
Stammering, the beginnings of, in childhood and youth ... 695
Status lymphaticus ... 206
Syphilis and its relations to infant mortality ... 308
Syphilis of third generation, report of a case of ... 60
Tarr, Earl Mendum. Diagnosis of congenital hypertrophic pyloric stenosis and pylorospasm ... 154
Tarr, Earl Mendum. Intravenous injections in infancy—advantages of the superior longitudinal sinus route ... 72

Testicle implantation 575
Tetany, diagrammatic charts of electrical reactions in. Weitzel....... 477
Tetany, the production of, by the intravenous infusion of soda bicarbonate 122
Thymus death 320
Tonsillar infection and recurrent vomiting, the relationship between.. 51
Tonsillectomy, the care of children before and after.......... 256
Tonsillectomy in the young child, the remote results of.......... 50
Transfusion, changes in the blood immediately following.......... 126
Transfusion in infants and children—the indications and dangers.... 341
Treatment of club feet in the new born.......... 253
Treatment of children with tuberculin, some clinical experiences in the. 431
Tuberculosis in children 600
Tuberculosis in infancy and childhood, the complement fixation test for. Heiman 32
Tuberculosis in infants and children, the significance of 49
Tuberculosis, the complement fixation test in the diagnosis of 247
Tuberculous cervical adenitis, the treatment of.......... 499
Trichiniasis, a case of 362
Typhoid, treatment of, with injections of colloidal gold.......... 691
Uniovulva twin with congenital absence of the right femur.......... 502
Vaccine therapy in diseases of the skin.......... 603
Van der Bogert, Frank. The influence of food upon development... 625
Vegetable milk in children, preliminary report on the use of. Chapin 28
Ventricular drainage by puncture of the corpus callosum.......... 52
Vincent's angina 292
Vitamines, the excretion of the. Muckenfuss.......... 80
Vomiting in infants 468
Wall, Joseph S. Pyloric stenosis of infancy.......... 193
Weitzel, John S. Diagrammatic charts of electrical reactions of tetany 477
Whooping cough, treatment of 250
Whooping cough, vaccine therapy—the most rational and effective method of treating, Bloom.......... 1
Whooping cough patients, care and treatment of.......... 371
Wilson, May G. Report of the Cornell nutrition class.......... 37
Woman's milk, a study of the lactose, fat and protein content........ 326
Wollstein, Martha, and Mixsell, Harold R. Report of a case of hepatoma in an infant 268
Wright, John D. The basic procedure in an educational system for defectives, with special reference to the deaf.......... 572

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ORIGINAL COMMUNICATIONS

VACCINE THERAPY—THE MOST RATIONAL AND EFFECTIVE METHOD OF TREATING WHOOPING COUGH

Additional Observations

By CHARLES JAMES BLOOM, M.D., B.S.C.

Assistant Professor of Pediatrics, Post-Graduate College of Medicine; Instructor, Department of Pediatrics, College of Medicine, The Tulane University of Louisiana; Senior Pediatrist, Lying-In Hospital; Junior Pediatrist, Touro Infirmary; Visiting Pediatrist, Charity Hospital, New Orleans, Louisiana

Medical science, as a collective unit, has made a continuous progress during the last score and ten years. Epidemics, that were prone to act so destructively; clinical entities that were thought etiologically to have been unknown quantities have gradually sought the kingdom of oblivion. Persevering and painstaking bacteriologists have discovered by arduous labors and concentrated efforts, the goals of their endeavors. Specific bacteria for particular diseases have been their reward. We trust that the time is not far distant when the unknown causes of the remaining illnesses will have been reduced to infinity.

And finally, after many years (1896-1906), two Belgian confrères were rewarded in the discovery of the organism as the causative factor of whooping cough that bears their name.

The literature covering this subject is rather extensive; the various deductions, summaries and conclusions varied. However, after an intensive review, pro and con, one cannot keep from concluding that vaccine therapy has untold merits and should be given the consideration by physicians it justly deserves.

Bordet-Gengou[1],[2] (1906) claim to have found a specific organism as the causative factor of whooping cough; being found only in the early period of the disease and being particularly noted in the expectoration that comes from the vicinity of the bronchi, expectorated during the periodic excesses of the disease. "As the disease progresses, on successive days fewer and fewer specific bacilli are found and phagocytosis is more frequent than earlier." They describe the micro-organism of pertussis as "little ovoid bacilli, somewhat elongated at times, but frequently so short as to resemble a micrococcus." With Kuhne's carbolated blue stain, the bacilli will stain a pale blue, and the outline of the bacilli, and particularly its poles, are frequently more deeply stained than the center, which was Gramm negative. It also grows luxuriantly in liquid medium of 1% glycerinated boullion with equal parts of rabbit's blood or human serum. "The authenticity of this bacillus as the colossal agent in whooping cough rests in a large part on the strains in which it is found, namely, the excessive growth of the organism in pure culture during the initial period of the disease in young children who have never been ill. The principal argument, however, in favor of the organism appears to be furnished by a study of specific properties of a serum. The serum of individuals who have never had whooping cough, or who have had it a long time before, does agglutinate the bacillus even in low dilution. The serum of children who have recently recovered from the disease has a moderate agglutinating property which is constant and evident. The most remarkable fact, however, is the intensity of the sensitizing properties in such serums. [Bordet, in a later communication (1908) obtained an endotoxin from the organism.]

It has been the ambition of the discoverers to obtain a serum by utilizing the endotoxin instead of the organism, claiming that the bacilli produce a poison that necessitates a necrosis of the ephithelial covering of the bronchi, thereby producing the symptoms of whooping cough and prolonging the duration."

Bordet,[3] in a very intrinsic way, describes the histological, cultural characteristics, chemical action and pathology concerning the organism that bears his name. His article contains a thoroughness of expression, a conscientious scientific victory, and satisfying conclusions. He tries at all times to be thoroughly truthful in his experiments, and the result of many years of arduous labor and toil has given to the medical profession and to the world at large, a remedy which most of the scientific physicians believe to be thorough and effective.

Graham[6] (1911) at first used 20,000,000 bacteria every fourth day, subsequently increasing his dosage to 40,000,000. There were no constitutional or local symptoms. The interval was reduced to 3 and then 2 days, the maximum dosage remaining at 40,000,000. The average number of injections given varied from 6 to 9. In 22 cases of the 24, they received 9 injections (interscapular region):

	Cases
Less than six months	3
Six months to one year	2
One to two years	4
Two to four years	10
Four to eight years	5

These reports do not represent the true worth of the remedy, as I believe better results would surely have been obtained had larger doses of the vaccine been employed. 40,000,000 may be, and probably is, a sufficient dose in a mild case in an infant or a young child. 100,000,000 would be a much more suitable dose for a severe case regardless of the age of the patient. Seventeen patients, or about 71%, were apparently benefited by the treatment. The results obtained in these 24 cases warrant, in my opinion, a more extensive trial of the vaccine.

Mallory[5] (1913) continued the bacteriological experiments relative to whooping cough. Perhaps the greater part of our indebtedness for discovery of this particular organism can be accredited to Bordet-Gengou, who finally, after experimentation for 16 years, were successful in isolating this particular bacillus. In 1908, Klimenko[4] closely repeated the work of the former and confirmed their results. Koch's postulates were proven in every detail. Mallory was able to duplicate in puppies and rabbits a pathological lesion which we have found in the human cases. He used strains obtained from patients and also an original strain from Bordet with similar results. "There is no question about the organism occurring in whooping cough and not from any other disease, and of its relation to the lesion." "The work on animals seemed equally sure until similar organisms were found between the cilia of the cells lining the trachea and bronchi." "In other words, there is an additional bacterium that produces a lesion in a dog, without causing the disease to be produced in a human." Histologically, the two organisms are so similar that it is with difficulty that they are differentiated. "It is only by the use of special culture media that one is able to definitely separate the two." "The bacilli recovered from the human seem to act mechanically only. They hinder the action of the cilia and furnish a continuous irritation which stimulates the spasmodic cough. Finally the cough, which is not able to move the organisms, is followed by a violent intake of air, the whoop. While the action of the organism is chiefly mechanical, it evidently secretes a certain amount of toxin. This is shown in 3 ways. There is a slight inflammatory reaction. Leucocytes in small numbers migrate through the wall of the trachea. The blood of whooping cough patients always shows a certain degree of lymphocytosis. Finally, the blood serum develops an antibody which renders it possible to obtain a complement fixation test."

Zahorsky[7] (1909) obtained results by administration of from 10,000,000 to 20,000,000 every 3 days in infants, and from 20,000,000 to 100,000,000 in later and severer cases every fifth day.

Conclusions. "In one-quarter of all cases no effect observed in the beginning or at the height of the disease. Temporary improvement appears at first which does not occur after repeated doses. Best effect obtained when disease is at its height. Has doubtful value in preventing disease."

Complicated Cases. "Effect uncertain, vaccine may do harm. One fatal case reported out of 3."

Final Conclusion. "Pertussis bacterin in doses of 30,000,000 to 50,000,000 is a very helpful therapeutic resource. It should be given hypodermically every 3 or 4 days in infants from the beginning; in older children at the height of the disease. It is questionable whether it hastens permanent immunity."

Freeman[8] (London, 1909) in a brief article outlines his cases, but inasmuch as they are few in number, his conclusions have no positive bearing.

Class	Vaccine Cases	Control Cases
Much better	31 %	21.55%
Better	37.1%	34.55%
Worse	15.7%	23.9 %
Much worse	1 %	1.85%

Conclusions. Close observation for a long time required. Control and observation by another person necessary. Trustworthy serum reaction not yet obtained.

Lehman's[9] treatment, though unique, was not unlike those who first used vaccine-therapy in the treatment of whooping cough. Coquelchin made from a virus of the disease, triturated, was given hypodermically or by mouth.

Bacher and Menschikoff[10] treated a series of 24 cases with a vaccine obtained from the original strain of the Bordet-Gengou bacilli, the initial dose ranging from 5,000,000 to 20,000,000, and subsequent doses given at intervals of from 4 to 7 days, increased to 200,000,000. One-half of their cases were not at all effective, while the improvement in the remainder could not be ascribed to the effects of the vaccine.

Saunders, Johnson, White and Zahorsky[11] treated a series of 40 cases and immunized 14. Began with 5,000,000, afterwards increasing to 25,000,000. Of the cases immunized, one developed whooping cough, which lasted one week, and 7 developed a mild cough lasting for one week, whereas the remaining 7 did not show evidences of the disease.

Conclusions. The vaccine is of high value as a prophylactic agent, although there is uncertainty as to the length of the immunity. As a remedial agent, it should be administered promptly. Reports are favorable in nearly all cases. In late cases, larger doses may be given with better results.

In these deductions Zahorsky has altered his opinion expressed previously regarding the efficiency of this method of treatment.

Ladd[12] uses a specially prepared vaccine, giving 20,000,000 every 5 days, and his number of cases is limited to 9:

Case	Amount of Vaccine	Duration before treatment	Duration after treatment	Number of injections
1	150,000,000	8 weeks	8 weeks	6
2	170,000,000	3 weeks	6 weeks	8
3	120,000,000	2 weeks	4 weeks	4
4	100,000,000	3 weeks	3 weeks	3
5	100,000,000	3 weeks	2 weeks	3
6	100,000,000	1 week	4 weeks	4
7	120,000,000	3 weeks	5 weeks	6
8	80,000,000	incomplete		2
9	37,000,000		3½ weeks	3

Conclusions. Worthy of trial; larger doses at more frequent intervals.

Scott[13] using 20,000,000 bacteria for the first injection, and 40,000,000 every fourth day for 4 or 5 days, did not have very encouraging results.

Zahorsky[14] (1912) is not very encouraging, for in the main part his conclusions are not satisfying. In addition, most of the cases had received medical therapy, and therefore, deductions are not of particular significance in his series of 30 cases.

Conclusions. 1. Pertussis bacterin in doses of 30,000,000 to 50,000,000 is a very helpful theapeutic resource.

2. It should be given hypodermically every 3 or 4 days in infants from the very beginning; older children at the height of the disease.

It is questionable whether it hastens permanent immunity.

Davidson[15] (1912-13) used a simple stock vaccine which had been cultivated in a 2/10% ascites agar with trikersol. His experience, though limited, was encouraging. The dosage for infants began with an initial 6,000,000, and after 4 days, the second injection of 12,000,000 was given. In older children, the initial administration of vaccine was 10,000,000, and the second 20,000,000 bacteria, respectively.

The series of Scott[16] (1913) covered 17 cases; 3 of them not cured but benefited, commercial simple vaccine, dosage 10,000,000 to infants and 20,000,000 to older children at intervals of 3 to 4 days, 3 times weekly in severe cases. Has increased initial dose to 40,000,000 and uses successive doses in proportion to the effect of the preceding dose.

Conclusions. Number of attacks less, severity diminished, cyanosis less marked, vomiting disappeared, children slept better, no reaction from the vaccine.

Wilson[17] (1913) reports findings in a series of twenty-four cases. The initial dose of 20,000,000 bacteria was administered; in the older 40,000,000. In the first thirteen cases, the vaccine was continued after the whooping had stopped; in the eleven other cases, after the spasmodic elements disappeared, the vaccine was discontinued. The duration was from nine to forty-eight days. As these twenty-four cases were in an institution containing 500 children, and as the remaining children were vaccinated in a preventive way, and no cases developed, these results speak for themselves.

Luttinger's[18] (1913) article was very encouraging. He utilized a commercial vaccine, 20,000,000 to 40,000,000 every fourth to seventh day. Results: indifferent. Reported ten cases in series, three with larger doses at shorter intervals; one case prophylactic.

Case Number	Total duration in days	Duration after treatment	Number of injections
1	23	14 days	4
2	28	14 days	3
3	37	16 days	6
4	16	12 days	2
5	34	12 days	1
6	27	13 days	4
7	27	13 days	4
8	18	16 days	4
9	43	15 days	6
10	22	8 days	3

Total dosage: 150,000,000-750,000,000.
Maximum dosage: 200,000,000-1,125,000,000.

Conclusions. Pertussis vaccine in ten cases apparently reduced the severity and shortened the duration of the disease. It should be given in larger doses at shorter intervals than hitherto recommended. A dose of 50,000,000 should be tested as a prophylactic. It is obviously absurd to draw conclusions from incomplete records, and unfortunately most of these obtained in the average outpatient department are of this class.

Sill[19] (1913) reported forty-six cases in all, treated with the pertussis vaccine, using from 20,000,000 to 60,000,000 of the combined vaccine at intervals from one to seven days. Three cases apparently successfully immunized, one with four doses of 20,000,000 each, at weekly intervals; another with nine doses of 20,000,000 during a month, and the third with three doses of 25,000,000, 50,000,000 and 75,000,000, respectively. The average duration of the disease in this last series was 6½ weeks. Six of the cases lasted for seven weeks and over.

Conclusions. Responds quicker when seen earlier. After one to three injections the number and severity of the paroxysms lessened; best treatment at hand; *relieves symptoms and prevents complications.* The younger the child, the quicker the response.

Bamberger[20] (1913) used the simple autogenous vaccine, and his experience was limited to six cases; the dosage being 20,000,000 every other day. The minimum number of injections were five, the maximum 15.

Case	Number of injections	Duration after treatment	Total duration
1	5	13	20
2	9	18	42
3	7	16	30
4	8	18	28
5	15	30	41
6	8	22	32

Even at this time, he advocated larger doses (500,000,000).
Bamberger—100,000,000-300,000,000. (1st series.)

Kelsalls[21] (1914) cases, as included in his series, were 30, their ages ranging from two months to 12 years. He began with 20,000,000 to 25,0000,000 as the first dose and subsequently increased it to 50,000,000, repeating the maximum dose from four to seven days until three to six doses had been administered.

Conclusions. Pertussis vaccine constitutes the most potent and successful remedy at our command for the treatment of this disease and possibly also for its prevention. It renders paroxysms milder and less frequent. It shortens the disease and is a great aid in the prevention of complication. The dose should be larger than hitherto recommended, at least in children of five years and older.

Kerley,[22] in speaking of Freeman, stated that the latter had treated 1,140 cases with records. He believed that there was some improvement in these cases following the administration of the vaccine. The dosage given contained 250,000,000 Bordet-Gengou bacilli and 10,000,000 pneumococci once each week, younger children receiving 50,000,000 Bordet-Gengou bacilli and 2,000,000 pneumococci.

Hartshorn & Moeller[23] (1914) criticize the mixed vaccine in the treatment of this disease. Their series is limited to eighteen cases, treated with a stock culture made from the pure strain. "The dosage was 25,000,000 given in the first treatment and 50,000,000 subsequently, the vaccine being administered once each week, and the buttocks being the site chosen." In some cases, the vaccine used contained appropriate strains and two of them in particular required only one treatment, and the entire course of the disease, as noted in their conclusions, was not over six weeks.

Series of eighteen cases treated with a commercial vaccine made from a pure culture of the Bordet-Gengou bacillus. 25,000,000 were administered at the initial dose and 50,000,000 subsequently, and in older children 50,000,000 for the first, increasing up to 400,000,000 at 5-day intervals.

Conclusions. A certain number of cases will respond favorably to commercial vaccine. In that the improvement in a few cases was immediate and striking, it seems fair to suggest but not to recommend it. Of the eighteen cases treated, twelve showed marked improvement and six failed to be benfited.

Hess[24] (1914) said: "In our experiments, we made use of different kinds of vaccine:

1. A polyvalent vaccine composed of Bordet-Gengou bacillus and two atypical strains.
2. Parke, Davis & Company's Bordet-Gengou bacillus.
3. Bordet-Gengou bacillus isolated in the Board of Health Laboratory.
4. Three strains of Bordet-Gengou bacillus isolated from cases in our epidemic.
5. Pure autogenous vaccine.

These cases (375 infants under five years of age) were all infected from the same source, probably with one strain. The children were living under the same conditions and came from the same stratum of society. They were getting the same food and fresh air. This corresponds as closely as possible to the laboratory experiments where animals are kept under the most similar conditions. As regards our results, out of 244 cases inoculated with vaccine, 21 developed whooping cough. There was found to be considerable difference in the effect of various vaccines. The third type seemed to have specially good results in that only six of 141 cases deevloped whooping cough. There were 130 cases not inoculated. Of 75 control cases not vaccinated, 59 came down with the disease. Twenty-one of 144 vaccinated cases came down with the disease. This would show some preventive action of the vaccine. The whooping-cough was of a very mild kind. There were no deaths and very little pneumonia. The most severe cases occurred among the vacinated. It was found that where prophylactic vaccination failed, the vaccine had no effect curatively.

The most severe cases recorded had received a large dose, 2,000,000,000 by mistake. The results to be drawn from this are that prophylactic pertussis vaccination is of value, especially in institutions. It is not of value in a curative sense, but there is no vaccine, so far as I know, that is of use curatively."

Hoag[25] (1916) summarizes his results as follows: *Prophylactic Treatment with Conclusions.* Seventeen cases unquestionably exposed to pertussis but not showing symptoms—not one of this number has developed the disease. The immunity injections contained 500,000,000, 1,000,000,000 and 2,000,000,000, respectively (simple). I should not hesitate now giving a full immunity dose for a new-born infant. As a prophylactic, in our experience, it has been absolute, and every endeavor should be made to induce those who have been exposed to take advantage of the vaccine.

Active Cases—Conclusions. The number of injections varied from three to eight, the amount of vaccine given from 1,500,000,000 to 18,000,000,000. The number of cases treated were fifty-three, and the average duration of the whoop was 19⅓ days. The minimum was nine days, maximum 90. Vaccine seemed effective in any stage of the disease, and should be given though the patient is well advanced in the paroxysmal stage.

Luttinger's[26] (1915) report gave promise of a new era for the usage of the vaccine method of treatment. *Doses and Intervals.* At the beginning, an initial dose of 50,000,000 used to be given which was doubled every three or four days. Now we start with 250,000,000 which is doubled every other day, provided there is no reaction; namely, the second dose is double the first, the third is twice as large as the second, and the fourth twice as large as the third, or 2,000,000,000. In prophylactic cases only three injections of 500,000,000, 1,000,000,000 and 2,000,000,000, respectively are given every three days.

Reaction. In nearly 3,000 injections given, I have never seen a single severe reaction; a few moderate reactions with malaise, headache and a temperature not over 100.5° F. have occurred, but in most of them, it could be ascribed to gastro-intestinal or other disturbances. *There is absolutely no danger of anaphylaxis.*

Of the 376 cases treated at the whooping-cough clinic, only a fraction are available for comparative study, and the records show that only 138 were treated with the vaccine alone. Of this number 115 came to us within three weeks of the paroxysmal stage. The average duration was twenty-five days. Nevertheless, the vaccine treatment seems to decrease the paroxysmal stage compared to the drug treatment by over two weeks. What is more significant, however, than the shortening of the duration, is the prompt amelioration which follows the administration of the vaccine in nearly all cases.

The whoop becomes milder and in the last weeks consists often of an occasional paroxysm only. In some cases, especially when a moderate reaction follows the first injection, a slight aggregation takes place in from 24 to 48 hours. The course of a pertussis case treated with vaccine is usually as follows:

1. Decrease in the severity of the night paroxysms.
2. Vomiting stops—severity of day paroxysms abate.
3. Night paroxysms stop—day paroxyms reduced in number.
4. At the end of the first week of treatment, whoops are about 25 per cent of their former frequency.

Complications. Only three cases of the entire number developed pneumonia and all recovered.

Prophylactic Cases. Nine cases with exposure from one to fourteen days to an active case of whooping cough. None developed the disease. The remaining twenty-five cases who had already had some signs of pertussis ceased coughing during or soon after treatment. Therefore, all thirty-four cases treated practically with positive results.

Conclusions.

1. Pertussis stock vaccine as prepared by the Bureau of Laboratories seems to have a prophylactic value when given in higher doses.
2. In the treatment of pertussis, these vaccines seem to have shortened the duration and severity of the paroxysmal stage; average duration of the whoop being 25 days, compared with 40 days of those treated with drugs.

Further experiments with the view of obtaining more effective vaccine and a closer coöperation of the profession in public health education may help in the eradication of pertussis, this scourge of childhood which kills yearly 10,000 American children.

Perhaps the most convincing article on the subject of whooping-cough is contained in the last contribution by Luttinger[27] (1917).

Curative Cases. The average duration of this series was thirty-seven days. In the 709 cases where the pertussis vaccine was given before the end of the third week, the average duration was a little over twenty days.

Severity of Paroxysms. More significant, perhaps, than the shortening of the paroxysmal stage is the influence of vaccine on the severity and frequency of paroxysms. In a large majority of cases, the mother will begin her first report by saying, "The child slept much better after the injection."

Complications and Sequelae. We have records of only nineteen deaths among 5,000 patients treated with vaccine. Most of these deaths occurred in the first week of treatment before the vaccine could have any action.

Prophylactic Treatment. Over 600 children were given injections of pertussis vaccine; not all, however, gave a clear history of exposure. Of the total number 368 cases had been exposed to the disease. The first group containing those who already manifested symptoms; the second group those who had been exposed without any symptoms. Thus nearly 37 per cent of the patients treated with vaccine contracted pertussis, while over 63 per cent did not. Out of those showing symptoms, nearly 47 per cent contracted it, while in over 53 per cent, the disease was apparently avoided. The patients showing no symptoms whatever were nearly all protected (94 per cent). This would tend to show that unless the disease has infected the individual, it is much harder to prevent the development of the paroxysms than in cases free from symptoms. Out of 2,364 cases reported by private physicians and health officers, 2,047 (87 per cent) gave excellent results and 317 cases (13 per cent) gave negative or doubtful results.

Goler[28] gives very interesting data regarding the whooping-cough epidemic which prevailed in Rochester, New York, in 1916. There were 396 cases reported and 29 deaths. As health officer, he took additional precautions to have signs printed explaining the severity of this disease and asking that children be vaccinated who had not had the disease previously. Indeed his results were fruitful in that 10,000 children were vaccinated. Up to this time, only 5 per cent of the vaccinated children have developed whooping cough. The dosage given were 3 in number, 4 days apart—500,000,000, 1,000,000,000 and 3,000,000,000 respectively.

Von Scholly, Blum & Smith[29] (1917). Work represents a very extensive study of this ever important subject. Their work in the whole is in direction of disproving the fact that there is a particular organism causing whooping cough. Their tabulation is rather difficult for the average physician.

Conclusions.

1. Of all the cases, the short course was run in our nonvaccine control cases and those receiving inert, milk colored water.
2. None of our patients inoculated for prophylaxis with either influenza or pertussis vaccine contracted the disease.
3. A partial immunity was exhibited by 31.6 per cent of our families. 58 per cent of the children in these partially immune families escaped after exposure in the family. Of 700 children exposed in their families, 24.8 per cent escaped whooping cough.

Barenberg[30] (1918) believes that the "pertussis vaccine given even in large dosage, not only has no cūrative effect, but does not tend to lessen the severity of the disease."

His deductions are rather critical, in that he fails to state what type of vaccine or quantities used; how old the particular strain used; the question of preservatives was not mentioned, etc.

However, he continues, "As regards the prophylactic value of pertussis vaccine, the case is different. In both the former epidemic and in this one, the percentage of vaccinated children who developed the disease was considerably less than of those who were not vaccinated."

Group	Number of cases	When treatment was given	Number of cases contracting	Per cent not contracting Pertussis	Severity of disease. Per cent.
I. Early prophylactic	41	6-12 weeks before onset	12	70	mild 59 moderate 16 severe 25
II. Later prophylactic	280	2-12 weeks before onset	114	59	mild 52 moderate 22 severe 26
III. Double prophylactic (1915-1917)	60	15 cases 2-4 weeks before onset 8 cases 2-4 weeks before onset	23	61	mild 39 moderate 8 severe 53
IV. Curative*	28	1 week before to ½ week after onset	—	—	mild 39 moderate 14 severe 47
V. Non-Vaccinated	18	—	9	50	mild 33 moderate 11 severe 56

*These cases received three injections.

This work was a continuation of that of Hess, and was conducted in the wards of the Hebrew Infant's Hospital of New York.

Shaw[31] (1918) gives some very interesting statistics to prove the seriousness of this disease. Fully 80 per cent of the deaths from whooping cough in New York State during the five-year period, 1910-1914, were among infants under two years of age, and 96 per cent of the whooping-cough deaths were among children under five years of age. He quotes Roseneu of Harvard, who states that "In our country, disease ranks high as a cause of death among children. The mortality figures would be still higher if all the deaths directly or indirectly due to it were completely reported, for the fatal termination of it is usually due to complications and sequelae, which occur in ¼ to ⅓ of all cases. As a result of these complications, the original disease is frequently lost sight of entirely in our vital statistics." "In a study of 112 cases of whooping cough, where the vaccine was the only treatment employed, 36 per cent of the cases in which the vaccines were given after the whoop developed were shorter in duration and intensity. In 52 per cent, there were fewer paroxysms and of less severity, especially at night. There were no improvements, however, observed in 12 per cent of the cases, either in the severity or the number of paroxysms."

Bogert[35] (1918) used a minimum quantity of vaccine (50,000,000 plain) and prevented an epidemic of pertussis in a children's home where a case had developed, and in which institution there were forty-six inmates.

Huenekens[32] (1918) in a very recent article gives splendid results in favor of the vaccine therapy—both from an active and prophylactic viewpoint. His summary and conclusions are as follows: Pertussis vaccine from two to three months old, employed in very large doses, 1,000,000,000 and over, immunizes in only 12½ per cent of cases. Two to four weeks old vaccine confers immunity in from 25 to 75 per cent of cases. *Freshly prepared vaccine,* employed in the same dosage, shows evidence of antibody formation in 94 per cent of cases. *When used in still larger doses,* 1,000,000,000, 1,500,000,000 and 2,000,000,000, 100 *per cent positive reactions are obtained. The antibodies are demonstrable within one week after the last injection.* Pertussis vaccine should be *employed only when freshly prepared and without preservatives.* By fresh vaccine is meant a vaccine less than one week old. The most effective dosage is 1,000,000,000, 1,500,000,000 and 2,000,000,000, given on alternate days, for three doses. *It is most effective as a prophylactic,* but should be of great value in the early catarrhal stage of pertussis. *In doubtful cases of pertussis, the vaccine should be administered before an exact diagnosis can be made, especially during an epidemic or where there is a history of exposure.*"

The author has been interested in this subject since 1912, and though at the start with small doses and discouraging results were his lot, he continued the treatment continuously until now he feels that his conclusions are convincing and thorough.

In 1916, Bloom,[32] and again in 1917, Bloom[34] brought to the attention of his parish medical society the success he had had with this method of treating whooping cough and through his efforts a great many physicians are using it in his city. The following is a detailed record of the cases treated, and each subject pertaining to the title will be discussed in its natural sequence.

The following charts might serve to show the severity of this disease in our vicinity:

The results of this false premise are best told in statistics compiled by the Board of Health of New Orleans.

CHART No. 1
COMMUNICABLE DISEASES
Number of Cases

	1910	1911	1912	1913	1914	1915	1916
Diphtheria	608	386	1072	1249	1679	1833	....
Scarlatina	992	594	352	137	147	70	100
Smallpox	537	207	212	31	21	72	193
Typhoid fever	405	441	261	206	312	234	374
Measles	2556	2347	324	4657	677	353	3191
Whooping cough	*	*	83	109	278	177	141

*Not reportable.

CHART No. 2
COMMUNICABLE DISEASES
Number and Per Cent of Deaths

	1910	1911	1912	1913	1914	1915	1916
Diphtheria	37— 6	25—6.4	58—5.4	112—8.9	112—6.7	112—6.1	....
Scarlatina	28— 3	4— .6	9—2.5	2—1.4	2—1.3	2—2.8	1— .1
Smallpox	2— 4	2— .9	0— .0	2—6.4	0— .0	5—6.9	4— .2
Typhoid fever	107—26	106— 24	49— 18	60— 28	78— 21	79— 33	87— 20
Measles	72—2.8	40—1.7	2— .6	36— .7	8—1.0	3— .8	12— .3
Whooping cough	*	*	6—5.5	12— 11	16—5.7	19— 10	12—8.4

Average five years......8.1 per cent.
*Not reportable.

An intensive study of the statistics herein presented, evidences many important deductions and should assist in refuting the erroneous statements that *whooping cough is not a fatal disease.*

1. In New Orleans, La., during the past twenty-eight years (1884-1913), 855 children have died from whooping cough.

2. During the past five years, the mortality has averaged 8.1 per cent.

3. The death rate from whooping cough during the past five years has been 2 per cent greater than diphtheria; 7 per cent greater than measles and 6 per cent greater than scarlatina. *Many cases dying from complications and sequelae, are not included in these figures.*

4. In actual number of deaths, the comparison with measles, 802-739; as compared with scarlatina, 802-373.

DURATION

Series No. 1

Case	Treatment		
	Before days plus	After days	Total days
No. 1	5	18	23
No. 2	6	28	34
No. 3	5	28	32
No. 4	7	24	31
No. 5	42	22	64
No. 6	1	26	27
No. 7	7	13	20
No. 8	14	11	25
No. 9	1	28	29
No. 10	35	23	58
No. 11	14	32	46
No. 12	7	18	25
No. 13	8	13	21
No. 14	2	41	43
No. 15	1	31	32
Average	10	23	33

Series No. 2

Case	Treatment		
	Before days plus	After days	Total days
No. 16	6	13	19
No. 17	7	13	20
No. 18	4	11	15
No. 19 Syphilis	5	17	22
No. 20 Acidosis	7	21	28
No. 21	2	24	26
No. 22	*14	14	28
No. 23	*14	20	34
No. 24	*14	11	25
No. 25	*35	19	54
No. 26	*21	7	28
No. 27	4	12	16
No. 28	3	20	23
No. 29	7	12	19
No. 30	14	7	21
Average	10	15	25

*Omitting Cases Nos. 22, 23, 24, 25, 26, having had pertussis over two weeks.
Average......6 days plus 15 days 21 days

Series No. 3

Case	Treatment		
	Before days plus	After days	Total days
No. 31	10	6	16
No. 32	14	17	31
No. 33	10	8	18
No. 34	3	30	33
No. 35	13	16	29
No. 36	13	16	29
No. 37	7	16	23
No. 38	10	3	13
No. 39	13	12	25
No. 40	2	8	10
No. 41	12	9	21
No. 42	10	4	14
No. 43	2	15	17
No. 44	5	6	11
No. 45	10	7	17
No. 46	7	5	12
No. 47	7	18	25
No. 48	2	8	10
No. 49	10	16	26
No. 50	10	8	18
No. 51	13	30	43
No. 52	5	12	17
No. 53	7	7	14

Series No. 3—Continued

Case	Treatment		
	Before days plus	After days	Total days
No. 54	14	18	32
No. 55	2	16	18
No. 56	6	7	13
No. 57	3	12	15
No. 58	5	12	17
No. 59	7	3	10
No. 60	4	8	12
No. 61	8	20	28
No. 62	5	7	12
No. 63	10	15	25
*No. 64	7	14	21
No. 65	16	7	23
No. 66	15	7	22
No. 67	15	4	19
No. 68	16	6	22
No. 69	15	9	24
No. 70	15	3	18
No. 71	15	9	24
No. 72	15	4	19
No. 73	18	10	28

*Cases (65-73) treated after disease had lasted two weeks or over.
Average Cases Nos. 31-73. 9 days plus 10 days 19 days.

RECAPITULATION

Average	Duration		
	Before treatment	After treatment	Total number
Series No. 1	6 days plus	22 days	28 days
Series No. 2	6 days plus	15 days	21 days
Series No. 3	9 days plus	10 days	19 days

Ordinarily without the vaccine treatment the duration of pertussis according to authorities lasts: Holt, 60 days; Rotch, 90 days; Cautley, 120 days; Garrod, Batten and Thursfield, 40-148 days, and Ruhrah, 90-180 days, respectively.

The total average and duration of the entire series was about 20 days. If one takes into consideration that a great number of these cases had lasted 2 weeks and over, and add to this the fact that the majority were seen only in the later days of the first stage, the results as a whole are particularly gratifying. With the increase in the dosage, we have a corresponding decrease in the duration, as shown in the chart.

ACTIVE CASES

		Age		
	Under 1 yr.	Under 2 yrs.	2-5 yrs.	5-10 yrs.
Series No. 1	3	1	6	5
Series No. 2	2	4	5	4
Series No. 3	14	4	21	4
Total	19	9	32	13

In the entire series, the author has yet to record the loss of a child.

WEIGHT

1st Series (Cases Nos. 1-15.) (Active.)

Six (6) gained average 6½ oz.
Seven (7) lost average 21 5/7 oz.
Two (2) not weighed.
Average lost (13 cases), 14 oz.

2nd Series (Cases Nos. 16-30.) (Active.)

Case No. 16 (Not weighed).
Case No. 17 (Not weighed).
Case No. 18 (not weighed).

	At start	At discharge	Gain	Loss
Case No. 19	16 lbs. 11 oz.	15 lbs. 10 oz.	....	— 17 oz.
Case No. 20	29 lbs.	27 lbs.	....	— 32 oz.
Case No. 21	31 lbs. 8 oz.	32 lbs.	+ 8 oz.	....
Case No. 22	14 lbs. 10 oz.	15 lbs. 3 oz.	+ 9 oz.	....
Case No. 23	31 lbs. 4 oz.	31 lbs.		— 4 oz.
Case No. 24	20 lbs. 8 oz.	21 lbs. 12 oz.	+ 20 oz.	....
Case No. 25	18 lbs. 4 oz.	21 lbs.	+ 44 oz.	....
Case No. 26	36 lbs.	36 lbs. 12 oz.	+ 12 oz.	....
Case No. 27	49 lbs.	49 lbs.	....	....
Case No. 28	14 lbs. 8 oz.	13 lbs. 10 oz.	....	— 14 oz.
Case No. 29	35 lbs.	37 lbs. 4 oz.	+ 36 oz.	....

Case No. 30 (not weighed).
Six (6) gained average 20 oz.
Four (4) lost average 16 oz.
One (1) remained stationary.
Four (4) not weighed.
Average gain (11 cases), 5 oz.

THIRD SERIES (CASES NOS. 31-73) (ACTIVE)

	At start	At discharge	Gain	Loss
Case No. 31	26 lbs.	26 lbs.	....	....
Case No. 32	39 lbs.	37 lbs.	....	— 32 oz.
Case No. 33	29 lbs. 8 oz.	29 lbs. 4 oz.	....	— 4 oz.
Case No. 34	26 lbs.	23 lbs. 1 oz.	....	— 47 oz.
Case No. 35	48 lbs. 8 oz.	50 lbs.	+ 24 oz.	....
Case No. 36	50 lbs.	49 lbs. 4 oz.	....	— 12 oz.
Case No. 37	43 lbs. 4 oz.	44 lbs. 8 oz.	+ 20 oz.	....
Case No. 38	32 lbs.	32 lbs.	....	....
Case No. 39	20 lbs. 4 oz.	20 lbs. 8 oz.	+ 4 oz.	....
Case No. 40	12 lbs.	12 lbs. 2 oz.	+ 2 oz.	....
Case No. 41	20 lbs. 8 oz.	22 lbs. 4 oz.	+ 28 oz.	....
Case No. 42	52 lbs.	51 lbs. 8 oz.	....	— 8 oz.
Case No. 43	14 lbs. 8 oz.	14 lbs. 14 oz.	+ 6 oz.	....
Case No. 44	28 lbs. 8 oz.	29 lbs. 8 oz.	+ 16 oz.	....
Case No. 45	68 lbs. 4 oz.	68 lbs. 8 oz.	+ 4 oz.	....
Case No. 46	22 lbs. 8 oz.	22 lbs.	....	— 8 oz.
Case No. 47	30 lbs.	31 lbs. 4 oz.	+ 20 oz.	....
Case No. 48	27 lbs. 2 oz.	27 lbs. 8 oz.	+ 6 oz.	....
Case No. 49	28 lbs. 4 oz.	30 lbs. 13 oz.	+ 41 oz.	....
Case No. 50	23 lbs.	23 lbs.	....	....
Case No. 51	13 lbs. 12 oz.	13 lbs. 14 oz.	+ 2 oz.	....
Case No. 52	37 lbs. 12 oz.	38 lbs. 2 oz.	+ 6 oz.	....
Case No. 53	34 lbs. 4 oz.	34 lbs.	....	— 4 oz.
Case No. 54	17 lbs. 9 oz.	17 lbs. 8 oz.	....	— 1 oz.
Case No. 55	14 lbs.	15 lbs.	+ 16 oz.	....
Case No. 56	12 lbs. 12 oz.	12 lbs. 8 oz.	....	— 4 oz.
Case No. 57	17 lbs. 8 oz.	17 lbs. 8 oz.	....	....
Case No. 58	42 lbs. 4 oz.	41 lbs. 8 oz.	....	— 12 oz.
Case No. 59	33 lbs.	33 lbs.	....	....
Case No. 60	14 lbs. 8 oz.	14 lbs. 8 oz.	....	....
Case No. 61	15 lbs. 10 oz.	15 lbs. 4 oz.	....	— 6 oz.
Case No. 62	21 lbs. 8 oz.	22 lbs.	+ 8 oz.	....
Case No. 63	....	....	....	....
Case No. 64	....	....	....	....
Case No. 65	26 lbs. 1 oz.	26 lbs.	....	— 1 oz.
Case No. 66	53 lbs. 12 oz.	54 lbs. 12 oz.	+ 16 oz.	....
Case No. 67	39 lbs. 4 oz.	40 lbs. 8 oz.	+ 20 oz.	....
Case No. 68	38 lbs.	39 lbs. 2 oz.	+ 18 oz.	....
Case No. 69	34 lbs. 4 oz.	35 lbs. 8 oz.	+ 20 oz.	....
Case No. 70	27 lbs. 5 oz.	28 lbs. 12 oz.	+ 23 oz.	....
Case No. 71	13 lbs. 6 oz.	12 lbs. 12 oz.	....	— 10 oz.
Case No. 72	13 lbs. 3 oz.	13 lbs. 2 oz.	....	— 1 oz.
Case No. 73	20 lbs.	21 lbs.	+ 16 oz.	....

Twenty-one (21) gained 15½ oz.
Fourteen (14) lost 10 oz.
Two (2) not weighed.
Average gain (35 cases), 12½ oz.

RECAPITULATION

1st Series (cases 1-15), average loss (13 cases weighed)	14 oz.
2nd Series (cases 16-30), average gain (11 cases weighed)	5 oz.
3rd Series (cases 31-73), average gain (35 cases weighed)	12½ oz.

Cough and Cyanosis. The question of the cough is a valuable one. In no two cases do you find the results the same. But there is, as a rule, a difference in the intensity and number of coughing spells following the administration of the vaccine.

Some cases seem to "clear up" after the first or second injection; others continue throughout the duration of the disease, *but the cough is trivial and does not provoke vomiting and is not associated with cyanosis.*

I have not seen, in the last four years, a case where treatment was instituted right from the *first few days of the catarrhal stage*, that did not obviate the cyanosis entirely or render less severe the intensity of the individual coughing attacks.

One will see rather marked improvement, as far as the number of coughing spells or the intensity is concerned, as soon as two or three injections have been given, *although on the night following the administration of the vaccine the cough is considerably increased.*

Several cases referred to me in the second stage, where the symptom of cyanosis is paramount, cases that seem to cease breathing each time they cough,—the effects from the vaccine in some of the cases have been almost instant—while in other cases the number of attacks were deferred to longer intervals.

Marked Cases

Case No. 21. "Vomited everything she ate." Splendid result.

Case No. 22. Brought to office on pillow.

Case No. 23. Referred by Dr. L. L. "Because unconscious with each coughing spell"

Case No. 25. "Has had whooping cough for five weeks; unable to stand it any longer. Has lost about seven pounds."

Case No. 27. Referred by Dr. Wm. K. "Unable to count the coughs."

Case No. 28. "Unable to retain any food whatsoever, and has not slept since the whooping cough started."

Case No. 32. "Cannot retain a thing on her stomach, does not sleep and is miserable."

Case No. 34. "Baby is in a frightful state, does not eat, sleep or remain still a moment."

Cases Nos. 35-39. "We have had two other doctors, but our children have not improved. We are desperate for they are all critically ill."

Case No. 40. "We thought our baby would die last night. She became black and blue."

Case No. 44. "We did not think our darling would pass through the night."

Case No. 49. "Every time she coughs she becomes somewhat dazed, and seems blue in the face."

Case No. 50. "We have tried all remedies, but I am afraid our poor baby will not survive. One who knew her before would hardly recognize Elsie. She has changed so considerably."

Case No. 55. The child of a trained nurse: "The worst case of whooping cough I have ever seen."

Case No. 59. The daughter of a physician: "Almost choked to death last night."

Case No. 61. "We have all lost hope—baby is dying."

Case No. 65. "One of our children died yesterday, and Edna seems to be going rapidly."

Comment and Criticism

In order to demonstrate the efficiency or deficiency of this particular method, in the treatment of whooping cough, the author thought it best to state briefly the facts concerning the individual cases in question.

Case No. 31. Immediate relief.

Case No. 32. A rather discouraging case. The mother, however, failed to follow the diet, and was rather careless in the entire management.

Case No. 33. Rapid improvement.

Case No. 34. Vomiting persisted.

Cases Nos. 35-39. The relief in these cases was immediate.

Case No. 40. Rapid improvement.

Case No. 41. A critical case. The quick reaction was quite noticeable.

Cases Nos. 42-46. Encouraging from the first injection.

Case No. 47. It was only after three administrations that the patient showed any improvement whatsoever.

Case No. 48. Immediate response.

Case No. 49. A striking case. Splendid results.

Case No. 50. This child would have probably succumbed had not the vaccine method been given—the results were most positive.

Case No. 51. Distinctively negative.

Case No. 52. Effective from the onset.

Cases Nos. 53-54. Mild cases.

Case No. 55. The intensity of the coughing spells remained throughout the entire course of the disease, but her appetite returned in the second week and sleeplessness disappeared after the first week.

Case No. 56. A very sick child, who reacted with the first and successive doses in a most satisfying way.

Cases Nos. 57-58. Mild cases.

Case No. 59. The most remarkable case of this entire series. The distressing symptoms were relieved instantly. Particularly gratifying because child was the daughter of a physician who at the time was taking postgraduate work at our college.

Case No. 60. Mild case.

Case No. 61. Vaccine accomplished what all forms of medicine failed to do.

Case No. 62. Mild case.

Cases Nos. 63-64. Instant relief.

Case No. 65. One of my worst cases; improvement rapid and appetite returned immediately.

Cases Nos. 66-71. Fair improvement with first injection. Seemed cured after second.

Case No. 72. Effective, beyond the questioning.

Case No. 73. Results were splendid.

SERIES NO. 2

Prophylactic Cases

	Total amount vaccine	Dosage		No. of doses	Type vaccine
		Maximum	Minimum		
Case No. 74......	9,500,000,000	3,800,000,000	1,900,000,000	3	Mixed stock
Case No. 75......	9,500,000,000	3,800,000,000	1,900,000,000	3	Mixed stock
Case No. 76......	9,500,000,000	3,800,000,000	1,900,000,000	3	Mixed stock
Case No. 77......	9,500,000,000	3,800,000,000	1,900,000,000	3	Mixed stock
Case No. 78......	9,500,000,000	3,800,000,000	1,900,000,000	3	Mixed stock
Case No. 79......	9,500,000,000	3,800,000,000	1,900,000,000	3	Mixed stock

ACTIVE CASES
SERIES NO. 2

(Phylacogen Treatment)

Case No.	
80..	1st dose, ½ c.c.; 2nd dose, 1 c.c.; 3rd dose, 1½ c.c.; 4th dose, 2 c.c.; 5th dose, 2½ c.c.
81..	1st dose, ½ c.c.; 2nd dose, 1 c.c.; 3rd dose, 1½ c.c.; 4th dose, 2 c.c.; 5th dose, 2½ c.c.
82..	1st dose, ½ c.c.; 2nd dose, 1 c.c.; 3rd dose, 1½ c.c.; 4th dose, 2 c.c.; 5th dose, 2½ c.c.
83..	1st dose, ½ c.c.; 2nd dose, 1 c.c.; 3rd dose, 1½ c.c.; 4th dose, 2 c.c.; 5th dose, 2½ c.c.

SERIES NO. 3

Prophylactic Cases

	Total amount vaccine	Dosage		No. of doses	Type of vaccine
		Maximum	Minimum		
Case No. 84...	15,000,000,000	5,000,000,000	5,000,000,000	3	Mixed special stock
Case No. 85...	15,000,000,000	5,000,000,000	5,000,000,000	3	Mixed special stock
Case No. 86...	18,500,000,000	6,500,000,000	3,000,000,000	3	Mixed special stock
Case No. 87...	13,000,000,000	5,000,000,000	3,000,000,000	3	Mixed special stock
Case No. 88...	11,000,000,000	6,000,000,000	5,000,000,000	2	Mixed special stock
Case No. 89...	15,000,000,000	5,000,000,000	5,000,000,000	3	Mixed special stock
Case No. 90...	11,400,000,000	3,800,000,000	3,800,000,000	3	Mixed special stock

SUMMARY

Maximum dosage, 6,500,000,000.
Minimum dosage, 3,000,000,000.
Average number of doses equals 3.

Treatment

Prophylactic—Summary and Conclusions

1. No active case of whooping cough has developed in a

single instance, where the prophylactic administration of the vaccine had been given; some of the first series now having passed two years.

2. A number of cases thus vaccinated have been directly exposed to whooping cough since the vaccine was given them.

3. For the present my routine will be as follows:
   I. Use the mixed vaccine.
   II. Use large dose, at least 5,000,000,000 bacteria.
   III. Use fresh vaccine, namely, one that has been prepared for a period less than two weeks.
   IV. Repeat on alternate days this quantity—until three doses have been given—the total amount of 15,000,000,000 bacteria being injected in the three doses.
   V. Contraindications, such as lues, bronchial asthma or a marked case of marasmus; in these instances, divide the dose in two; namely, 2,500,000,000 on alternate days for three doses.
   VI. Repeat every two years at least; otherwise every year if the complement fixation test justifies it.
   VII. The expediency of utilizing phylacogens will again be questioned.

VACCINE

The mixed vaccines employed in Series No. 1 were as follows:

Bordet-Gengou bacilli	50,000,000
Staphylococci pygenes aureus	10,000,000
Micrococci catarrhalis	20,000,000
Bacilli Influenzæ	20,000,000
Streptococci pyogenes	20,000,000

The quantities used in Series No. 1, and number of injections, were as follows:

Case	Amount mixed vaccine equals		
No. 1	500,000,000	Number of injections equals 5	Minimum dose. 120,000,000 Maximum dose, 240,000,000
No. 2	660,000,000	Number of injections equals 7	
No. 3	624,000,000	Number of injections equals 7	
No. 4	1,268,000,000	Number of injections equals 12	
No. 5	596,000,000	Number of injections equals 7	
No. 6	540,000,000	Number of injections equals 6	
No. 7	500,000,000	Number of injections equals 5	
No. 8	900,000,000	Number of injections equals 6	
No. 9	974,000,000	Number of injections equals 11	
No. 10	766,000,000	Number of injections equals 9	
No. 11	761,000,000	Number of injections equals 10	
No. 12	602,000,000	Number of injections equals 7	
No. 13	750,000,000	Number of injections equals 9	
No. 14	870,000,000	Number of injections equals 11	
No. 15	1,050,000,000	Number of injections equals 12	

The mixed vaccines employed in Series No. 2 were as follows:

Bact. pertussis	1,000,000,000
Staphylococcus pyogenes aureus	500,000,000
Streptococcus pygones	100,000,000
Micrococcus catarrhalis	40,000,000
Bact. influenzae (Pfeiffer)	160,000,000

The quantities used in Series No. 2, and number of injections, were as follows:

	Amount vaccine	Dose Minimum	 Maximum	No. of doses	Type of vaccine
Case No. 16	21,800,000,000	1,800 million	3,600 million	6	Mixed
Case No. 17	21,800,000,000	1,800 million	3,600 million	6	Mixed
Case No. 18	17,600,000,000	2,000 million	4,000 million	5	Mixed
Case No. 19	13,320,000,000	2,000 million	2,000 million	8	Simple
Case No. 20	25,000,000,000	1,000 million	4,000 million	8	Mixed
Case No. 21	1,600,000,000	120 million	400 million	4	Simple
Case No. 22	2,300,000,000	200 million	400 million	7	Simple
Case No. 23	4,200,000,000	200 million	2,000 million	8	Simple
Case No. 24	10,000,000,000	2,000 million	2,000 million	5	Simple
Case No. 25	26,000,000,000	1,000 million	4,000 million	10	Simple
Case No. 26	5,000,000,000	1,000 million	4,000 million	3	Simple
Case No. 27	22,950,000,000	2,000 million	4,000 million	7	Mixed
Case No. 28	11,100,000,000	400 million	3,600 million	4	Mixed
Case No. 29	7,300,000,000	500 million	2,000 million	5	Mixed
Case No. 30	14,200,000,000	3,800 million	3,800 million	4	Mixed

The mixed vaccines employed in Series No. 3.

RECAPITUATION

Number of Doses and Type of Vaccine (Active Cases)

	Vaccine Mixed	 Simple	Number of doses	
Series No. 1	15	..	8	
Series No. 2	8	7	6	
Series No. 3—				
Cases Nos. 31-64	34	..	4½	Average 3½
Cases Nos. 65-73	9	..	2½	

SERIES NO. 3
ACTIVE CASES

Case No.	Total Amount vaccine	Dosage Maximum	 Minimum	No. of doses	Type of vaccine		
31***	5,000,000,000	5,000,000,000	5,000,000,000	1	Mixed	(special	stock)
32*	41,000,000,000	6,000,000,000	5,000,000,000	8	"	"	"
33***	8,600,000,000	5,000,000,000	3,800,000,000	2	"	"	"
34*	26,800,000,000	5,000,000,000	1,800,000,000	6	"	"	"
35*	15,400,000,000	5,000,000,000	1,800,000,000	4	"	"	"
36*	19,000,000,000	5,000,000,000	1,800,000,000	5	"	"	"
37*	20,400,000,000	5,000,000,000	1,800,000,000	5	"	"	"
38*	10,000,000,000	5,000,000,000	5,000,000,000	2	"	"	"
39*	10,900,000,000	3,800,000,000	1,800,000,000	5	"	"	"
40***	3,600,000,000	1,800,000,000	1,800,000,000	2	"	"	"
41**	20,000,000,000	3,600,000,000	2,000,000,000	6	"	"	"
42**	8,000,000,000	4,000,000,000	4,000,000,000	2	"	"	"
43**	13,000,000,000	5,000,000,000	2,500,000,000	4	"	"	"
44*	19,000,000,000	5,000,000,000	1,800,000,000	7	"	"	"
45***	3,800,000,000	2,000,000,000	1,800,000,000	2	"	"	"
46***	10,000,000,000	5,000,000,000	1,000,000,000	4	"	"	"
47*	13,800,000,000	5,000,000,000	1,800,000,000	4	"	"	"
48*	22,000,000,000	5,000,000,000	4,000,000,000	5	"	"	"
49*	20,000,000,000	5,000,000,000	5,000,000,000	4	"	"	"
50*	17,500,000,000	5,000,000,000	2,500,000,000	4	"	"	"
51*	29,000,000,000	3,000,000,000	2,500,000,000	10	"	"	"
52*	35,000,000,000	5,000,000,000	5,000,000,000	7	"	"	"
53**	20,000,000,000	5,000,000,000	5,000,000,000	4	"	"	"
54**	13,000,000,000	3,000,000,000	2,500,000,000	5	"	"	"
55**	30,000,000,000	5,000,000,000	5,000,000,000	6	"	"	"
56**	9,300,000,000	5,000,000,000	900,000,000	5	"	"	"
57***	8,300,000,000	2,500,000,000	1,800,000,000	4	"	"	"
58**	7,200,000,000	3,600,000,000	1,000,000,000	4	"	"	"
59**	12,000,000,000	4,000,000,000	4,000,000,000	3	"	"	"

60*‡	15,000,000,000	3,000,000,000	2,500,000,000	6	" " "
61**	9,000,000,000	3,500,000,000	1,500,000,000	4	" " "
62***	5,800,000,000	1,800,000,000	1,800,000,000	3	" " "
63*	22,800,000,000	3,800,000,000	3,800,000,000	6	" " "
64*	16,400,000,000	3,800,000,000	1,800,000,000	6	" " "

*‡ = Critical cases. (Unconsciousness, maximum emaciation, etc.)
* = Severe cases.
** = Moderately severe cases.
*** = Mild cases.

SUMMARY

Critical cases .... = No. 5
Severe cases .... = No. 16
Moderately severe cases...... = No. 6
Mild cases .... = No. 7
Total 34 cases
Maximum dosage = 6,000,000,000
Minimum dosage = 900,000,000
Average number of doses (cases 31-64 inclusive) = 4½ doses

SERIES NO. 3
ACTIVE DOSAGE

Treated after the disease had lasted two weeks or more)

Case No.	Total Amount vaccine	Dosage Maximum	Dosage Minimum	No. of doses	Type of vaccine
65*‡	7,700,000,000	3,000,000,000	1,200,000,000	3	Mixed (special stock)
66*	3,800,000,000	2,000,000,000	1,800,000,000	2	" " "
67*	3,800,000,000	2,000,000,000	1,800,000,000	2	" " "
68*	2,900,000,000	2,000,000,000	900,000,000	2	" " "
69*	2,900,000,000	2,000,000,000	900,000,000	2	" " "
70*	1,800,000,000	1,800,000,000	1,800,000,000	1	" " "
71*	2,100,000,000	1,800,000,000	300,000,000	2	" " "
72*‡	7,500,000,000	2,500,000,000	2,500,000,000	3	" " "
73*‡	9,100,000,000	5,000,000,000	1,800,000,000	3	" " "

*‡ = Critical cases.
* = Severe cases.

SUMMARY

Critical cases = 3.
Severe cases = 6.
Maximum dosage = 5,000,000,000.
Minimum dosage = 900,000,000.
Average number of doses (cases 64-73 inclusive) = 2½ doses.

RECAPITULATION

(Series Nos. 1, 2, 3.—Active and Prophylactic.)

	Active (Vaccine)	Active (Phylacogen)	Prophylactic
Series No. 1......	15 cases	......	......
Series No. 2......	15 cases	4 cases	6 cases
Series No. 3......	43 cases	......	7 cases
Total	73 cases	4 cases	13 cases

TREATMENT

Active. During the past three years, the writer has used both the simple and combined or mixed vaccines in about 300 cases.

Constant and quicker results have been obtained when the combined vaccine was used.

Unfortunately autogenous vaccines are not practical for many reasons, namely:

1. In the early stage, when you need the vaccine most, there is practically no expectoration at all.

2. In only rare cases does one secure any sputum whatsoever; hence the inability to cutlture the organism.

3. Seldom can one secure a pure culture.

4. By the time your vaccine is delivered, the second stage will have been started.

From the very onset of this important subject, when the vaccines were first used, the writer has felt that perhaps there were two bacteriological factors: one the specific organism and the other the influenza bacillus. This belief prompted my deliberately using a mixed vaccine from the very start, contrary to the arguments of others.

In my successive combinations the number of Bordet-Gengou bacilli and influenza bacilli, constituting the vaccine used, have been increased in numbers as noted in the formulae.

In the future, in some of my cases, a vaccine containing these two organisms alone will be tried. Mallory has found two organisms in the dog, described in this paper. The question of the number of injections and time—concerns the individual case and no definite rule can be ascribed to either interrogatives.

The loss of appetite, loss of sleep and restleness while present in the majority of cases were not of sufficient importance to alter methods, and had no relation whatsoever, directly or indirectly, with the vaccine therapy.

As far as complications were concerned, the writer has yet to note a single case of pneumonia, tuberculosis, etc., in the cases constituting this paper. In relation to the reaction, one notes following the hypodermic administrations, rarely does the temperature exceed 101° F., the temperature is not affected in the greater proportion of the cases.

As a matter of fact, the only evidence of the aftermath, is a "hardened knot" described by mothers at the site of the injection.

I have never noted a case of anaphylaxis.

Active Treatment Method

1. *Site.* Arm. Tinct. Iodine. Alcohol. Luer syringe.

2. *Vaccine.* (a) Mixed and concentrated. 1 c.c. = 5,000,000,-000. (b) Fresh. With preservative, keep in cool place. (c) maximum doses. Start with 5,000,000,000. (d) Every other day initial dose—or increasing dose—6,000,000,000 to 7,000,000,000. (e) Administer every other day, until one of the symptoms shows marked remission. (f) As a rule 4 or 5 doses will suffice. (g) In critically ill cases, the vaccine may be given every day.

3. *Diagnosis.* (a) *Early.* Repeated blood pictures (unless there is some concurrent disease). *Lymphocytosis and leucocytosis.*

Pay particular stress to an increasing number of lymphocytes in preference to a questionable leucocytosis—for in the second stage—my results tend to show a leucopenia rather than leucocytosis—and this fact might deter treatment. (b) *Late.* After symptoms are present. Encourage the use of vaccine even in the second stage and occasionally in the third stage. (c) *Atypical Cases.* Oftentimes we have a case that does not respond to the ordinary cough medications. A study of these will reveal, perhaps, something that we least expected. Constant observation and blood pictures will assist materially.

4. *Treatment.* No medicinal treatment is indicated—unless the unusual occurs—and then symptomatic treatment should be practiced. Sometimes we are forced to give "something" as a parental satisfaction.

5. *Indications.* (a) A suspicious cough that does not respond to the ordinary prescription. (b) Children who have been exposed and who have not shown symptoms of pertussis. (c) Children exposed to whooping cough and having some symptoms. (d) Epidemics.

6. *Dangers.* None.

Conclusions

1. Vaccine therapy in pertussis is rational and effective.

2. Experience has proven its efficiency, both as a prophylactic and as an active therapeutic agent.

3. Usage: (a) Minimizes loss in weight. (b) Reduces the duration of the disease. (c) Decreases the intensity of the illness. (d) Foreshadows the possibilities of complications and sequelae. (e) Unattended by danger of anaphylaxis, etc. (f) Limits the mortality.

In conclusion, the writer wishes to thank Misses E. B. Hall and Elsa M. Langer, and Messrs. H. O. Hall and Homer J. Councilor, all of The Surgeon General's Library, Washington, D. C., for their assistance rendered and courtesies extended while writing this paper.

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Milk Mixtures. (Jour. A. M. A., Aug. 10, 1918). J. P. Crozer Griffith, Philadelphia, after remarking on the various devices for simplifying the making of milk-mixtures, and stating that the good points of the simple dilution procedure which he points out do not obviate the need of percentage calculations, describes a pocket card devised by himself for easy calculation of the proper amounts. The author's description of this card includes the essentials and is too detailed for a brief description. Some persons find it more convenient to construct the milk-mixture by means of an equation, and the directions for this are given on his card, as well as those for determining the strength of fat, sugar and protein, respectively. For those who find the equation method of calculation a burden, a table is printed on the reverse side of the card which enables one at a glance to prescribe practically any percentage likely to be used, in which nothing but milk, water and sugar are to be employed. Griffith says, that the commercial pasteurizing interferes with the making of milk-mixtures from the different layers. Whenever possible, if layer milk is to be used, it should be procured in the jar unpasteurized, as pure as can be obtained, the mixture prepared and this then pasteurized in the individual feeding bottles.—*Journal A. M. A.*

PRELIMINARY REPORT ON THE USE OF VEGETABLE MILK IN CHILDREN*

By Henry Dwight Chapin, M.D.

New York

Recent studies in the science of nutrition have shown that the food value of different articles cannot be estimated solely by their chemical formulae. As an example, I have shown that the milks of various animals cannot be compared by chemical ingredients alone, because one of the principal components, casein, reacts very differently in different species to the digestive enzymes.† The reason for this is that casein has a developmental, as well as a nutritional function to perform. Its purpose is evidently to develop a rapidly growing gastrointestinal tract in such a way that the food necessary in later years can be easily digested by well developed areas in the alimentary tract of each species.

There is another factor—an imponderable—that must always be considered in feeding the young, namely, the vitamines. Without these, growth cannot take place. To the pediatrician, the matter of food is of primary importance as he has not only to consider heat and energy production, but must lay special emphasis on growth. The period of the latter is limited and once lost cannot be regained. It is hence evident that a very careful study of any substitute foods must be instituted before it can be safely recommended. It is desirable, however, to have as great a variety as possible, especially when there is danger of a scarcity of any one article. Again, some foods may be useful and desirable as temporary substitutes even if their more permanent employment would not be wise.

Attention has been frequently drawn to the high nutritive value of various nuts. But nuts eaten as such are not an easily digestible food, mainly on account of their consistency, which on faulty mastication are mechanically highly irritating to the small intestines and colon, and even on proper mastication, nuts are not easily borne by the intestinal tract of children, or, when in catarrhal state, in adults. But in the form of an emulsion the extracts of nuts become, mechanically at least, very easily digested. Among the various nuts the almonds have received particular attention. Occasional references are to be found in American and foreign medical literature. My attention was drawn to the so-called almond milk by Dr. Ludwig Kast, who, at the Post-Graduate Hospital, has used it on his adult patients for several years. His experiences are shortly to be published with complete laboratory reports.

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*Read before the Thirtieth Annual Meeting of the American Pediatric Society, held at Lenox, Mass., May 27, 28 and 29, 1918.

†"The Function of Milk in the Scheme of Evolution." The Scientific Monthly, January, 1916.

According to the chemical analysis, the composition of the almonds, on an average, is as follows: Fat, 54.9; protein, 21.0; carbohydrates, 17.3; ash, 2.0; water, 4.8; the milk prepared from this nut has a good nutritive value, is pleasant and easy to digest and seems worthy of trial in various nutritional disturbances of early life. Sweet almonds on trituration with water yield a milk-white emulsion having the appearance and somewhat the taste of cow's milk slightly flavored with almonds. The nuts are first finely ground and then covered with water and allowed to stand in an ice box over night. The following day they are pressed out, using a potato ricer or fruit press, or they may simply be pressed out by hand through four layers of gauze, which is the method usually employed in our laboratory. 100 grams of nuts may be covered with 200 grams of water, and when squeezed out this is diluted up to 300 c.c. of water. (No. III.).

Chemical analysis, reported by Dr. Kast, of the trituration of almonds and water gave the following results which are here compared with an average analysis of cow's milk.

COMPLETE ANALYSIS OF ALMOND MILK

	Fat	Protein	Carbohydrates	Ash	Water
I.	5.19	3.3	.86	.36	90.5
II.	6.21	3.9	1.21	.43	87.8
III.	7.02	4.4	1.2	.55	86.74
			COW'S MILK		
	4.0	3.3	5.0	.7	87.0

MINERAL CONTENT

	Cow's Milk	Almonds (whole nuts)
CaO	20.01	14.5
MgO	2.42	18.3
Ma_2O	10.01	1.8
K_2O	25.02	11.1
MnO_2		.3
Fe_2O_3		
Al_2O_3	.13	.8
P_2O_5	24.29	48.1
SO_3	3.84	4.6
SiO_2		.2
Cl	14.28	.3

If heated to 100 celsius, the solution becomes opaque and gradually deposits a snow-white precipitate amounting to about 10 per cent of the emulsion employed. The almond milk must be kept cool to prevent the fermentation of its carbohydrates. It should be warm but not boiled.

According to Foster, the almond was a highly esteemed mendicament in the Hippocratic and Galenical eras, being used as an emulsion in pulmonary affections, in menstrual disorders and as a diuretic.

There seem to be certain advantages in the use of almond milk that may be considered from both a theoretical and practical standpoint. As regards the former (a) it ferments much less easily than ordinary cow's milk; (b) it has a higher fat ratio in the form of almond oil which is sufficiently emulsified to render it easily digestible; (c) proteins contained in this milk are much less apt to undergo putrefaction than the casein of cow's milk; (d) almond milk contains a large amount of phosphorus and a small quantity of sodium chloride which would suggest its favorable employment in such conditions as rickets and nephritis. From its low carbohydrate content it would also be indicated in various sugar fermentations.

On the practical side, it has been tried on more than 1,000 adult cases by Dr. Kast, and while some dislike it, actual disturbances have never been caused. Thus far, no patients have shown any idiosyncrasy to it. Patients kept on almond milk alone maintain their equilibrium of metabolism and usually gain in weight. Accurate metabolism experiments carried out by Dr. Kast on 2 adults showed that the nitrogen balance was maintained. In nephritis, typhoid fever, intestinal putrefaction, malnutrition and secondary anemia, it was particularly well taken and served a very good purpose.

A few trials of almond milk in infants and young children would seem to warrant further experimentation in various conditions. As the hardest kind of test of any food is to administer it to wasting infants in hospitals, it was tried in 3 such cases. These infants nearly always slowly lose upon any formula, so there was no hope of causing gain but simply to see if the food would be digested and absorbed in such a condition.

Helen A., age 3 months. On breast for 3 weeks and then on various milk formulae. She did not do well on the breast and continued slowly losing, until on admission she weighed less than her birth weight. She had from 1 to 3 stools daily that were light yellow, green and brown and varied in consistency. Urine negative. She was put on almond milk: fat, 1.9 per cent; carbohydrates 5.6 per cent; protein, 1.2 per cent. She took it as well as the milk preparations but without stopping the loss in weight. While on the milk formulae an examination showed the percentage of ether soluble material in the dry feces was 45 per cent, and 24 per cent after the baby was fed on the almond milk. The proportion of fat in the two foods was about the same.

M. B., age 2 months. Had been fed on the following milk formula: fat, 2.5 per cent; carbohydrates, 6 per cent: protein, 2.5 per cent. On this food the ether soluble material in the dry feces was 31.7 per cent. The baby was then changed to almond milk: fat, 3 per cent; carbohydrates, 6 per cent: protein, 1 per cent. At the end of the first 24 hours the ether soluble material in the dry feces was 40.3 per cent, and at the end of 48 hours 48.2 per cent. In the 2 days the baby gained 4 ounces, but as the increase in weight did not continue the experiment was concluded.

In the third case, a baby of 3 months with extensive bronchopneumonia took all milk feedings very badly and was rapidly losing weight. A trial of almond milk did not show any improvement and after 2 days, milk feedings were resumed. An autopsy showed extensive bronchopneumonia, an atrophic thymus, fatty liver, hyperemia and mucoid degeneration of the intestinal mucosa, lymphoid hyperplasia and uric acid calculi in the kidneys.

In these difficult cases the change to the almond milk seemed to have about the same effect as the usual alteration of formulae is apt to have in this type of case. It was digested and absorbed about the same as the cow's milk preparations.

The almond milk was substituted for cow's milk as a beverage in 6 cases over 2 years of age. Three took it well and seemed to like it, and the other 3 did not fancy it as well as the cow's milk. One boy of 2 years with Pott's disease and tuberculous peritonitis drank it for 8 days with other food, during which time he gained in weight and liked it as a beverage.

Further clinical observations of children are in progress.

THE COMPLEMENT—FIXATION TEST FOR TUBERCULOSIS IN INFANCY AND CHILDHOOD*

By Henry Heiman, M.D.

New York

There has been a very marked diversity of opinion with regard to the value of the complement—fixation reaction for the diagnosis of tuberculosis. Since 1903 when Bordet and Gengou[1] reported the presence of antibodies in the blood of animals afflicted with this disease, numerous workers have attempted to perfect a method for their accurate determination in man.

Amongst the earlier studies the most notable were those of Wassermann and Bruck[2] and later of Citron.[3] Their work was thorough and along modern principles. Their results, however, were very irregular and uncertain. It may be of interest to know, that it was these experiments on complement-fixation for tuberculosis, that led to the discovery of the Wassermann reaction.

During the next decade the researches of many laboratories were very discouraging. The reports vary tremendously. In 1911 Caulfield and Beatty,[4] in the Journal of Medical Research record 70 per cent and 62 per cent positive reactions in stages 2 and 3 of the disease respectively. No fixations were obtained in normal cases. The following year the same publication contains a report by Laird,[5] noting only 4 positive reactions among 34 tuberculous patients. Dielman[6] and Much[7] found positive fixations in clinically non-tuberculous cases and in perfectly healthy individuals.

During the past few years, the results have been almost uniformly much more favorable. Encouraged by the work of Besredka,[8] intensive studies were made by Inman,[9] Debains and Jupille[10] Bronfenbrenner,[11] McIntosh and Fildes,[12] Radcliffe,[13] and Petroff.[14] Very recently the best results have been published by Craig,[15] Miller and Zinsser,[16] and H. von Wedel[17] of the New York Health Department Laboratory.

Miller obtained 275 positive reactions among 284 tuberculous pulmonary cases. Non-tuberculous and normal individuals reacted negatively. Five cases of tuberculous bone and joint disease gave positive reactions. Of 4 cases with proven tuberculous meningitis, positive fixations were present in three.

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* Read before the Thirtieth Annual Meeting of the American Pediatric Society, held at Lenox, Mass., May 27, 28 and 29, 1918.

Craig's results have been equally favorable. Of 209 cases of tuberculosis, 87 per cent reacted positively, 96 per cent in the active stage and 65 per cent in the inactive stage. The latest figures on the subject are those presented by H. von Wedel at a recent meeting of the New York Academy of Medicine. He obtained 98 per cent positive reactions among active tuberculous cases.

The technic of the test is essentially the same as the Wassermann reaction. The important problem has been the development of a suitable antigen. All the antigens used have been grouped by Miller[18] into 4 general classes:

1st. Antigens composed of whole tubercle bacilli in suspension and after treatment with cold, heat, etc.

2nd. Tuberculins of all kinds have been used as antigens, notably by Besredka and Petroff.

3rd. Extracts of tubercle bacilli obtained by subjecting the bacteria to various processes of digestion and extraction.

4th. Antigens produced from tuberculous and normal tissue. These later have been employed by very few workers. Good results were obtained by Hammer[19] with this antigen. He reports 43 positive reactions among 46 tuberculous cases.

Being impressed by the many recent favorable results obtained on general groups of individuals, we thought it might be worth while to determine the value of the fixation reaction for the diagnosis of tuberculosis among infants and children. Very little work indeed has been done with special reference to the young. We have not been able to find any reports by English or American authors. Schlossman,[20] Bauer and Engel[21] were able to obtain positive reactions only in highly immunized children. Fua and Koch[22] reported negative reactions among 27 tuberculous cases including 6 tuberculous meningitis, 3 pulmonary tuberculosis, 5 tuberculous bone conditions and one tuberculosis of the pleura. Of 41 cases treated with tuberculin, 14 reacted positively. Bauer[23] found 15 positive reactions among 21 children injected with tuberculin.

Esther Rosencrantz[24] tested 100 sera of the new born obtained after section of the cord, and before expulsion of the placenta. The mothers were tuberculous. In all there were 14 positive reactions, 78 negatives, and 8 doubtful. She used an antigen produced by prolonged maceration of tubercle bacilli over a water bath.

Our own cases were taken from the pediatric service of Dr. Koplik at Mt. Sinai Hospital, and the tests were performed at the hospital pathological laboratory by Dr. D. Kaliski, in charge of the serological department.

The ½ Wassermann system is employed for all tests. Two antigens, those of Miller and Petroff were employed. The former was made in the laboratory by taking 20 mg. of a number of strains of dried tubercle bacilli, grinding intimately with 90 mg. of table salt, and then adding distilled water up to isotonicity. It is then titrated in the usual manner. The second antigen, kindly prepared by Petroff for the laboratory, consists of a filtrate of cultures on potato-broth and a glycerin extract. The sera from 50 patients ranging from 6 months to 12 years were tested. Sixteen cases were tuberculous, 6 were considered probable or suspicious, and 28 were non-tuberculous. Among the former groups we included 6 cases of tuberculous meningitis, 7 of pleural effusion, 6 pulmonary, one peritonitis, one adenitis, and one tabes mesenterica.

Our 6 cases of tuberculous meningitis ranged from 1 to 12 years. They all presented the clinical picture of the disease. There was nothing unusual in their course, all terminating in death. In 4 instances tubercle bacilli were found in the cerebrospinal fluid. Complement-fixation reactions on the blood of these patients with both antigens were negative in 4, only suspicious in 2 cases. It may be said that the lowered vitality fails to stimulate the production of antibodies, thus no inhibition takes place. But whatever the explanation may be, for the diagnosis of the condition we have found the test of no value.

Of 7 cases of pleural effusion, one case was definitely tuberculous, 3 were probably tuberculous, and 3 others were cases in which the etiology could not be clearly determined. In the first case tubercle bacilli were found in the pleural fluid obtained by aspiration. Complement-fixation tests on the blood of this patient were negative with Miller's antigen and 4 plus with Petroff's. In a second case we had a family history of tuberculosis and marked enlargement of bronchial lymph nodes as demonstrated by x-ray. Two other cases of probable tuberculous infection had a history of cough of long duration, periods of remittent temperature, positive v. Pirquet reaction and x-ray findings suggestive of pulmonary infiltration. In these cases complement-fixation tests were negative with both antigens. The serum of the three patients in whom the etiology was not clinically determined gave negative reactions also.

Of 6 children with pulmonary involvement, two were cases of miliary tuberculosis with the usual course. X-ray findings were very typical of the disease. In another case a boy of twelve with physical signs and x-ray findings pointing to involvement of right upper lobe, tubercle bacilli were demonstrated in the sputum. Two other cases showed only slight signs but with definite x-ray shadows of infiltration. Fixation reactions were all negative with both antigens in these cases. The 6th case had marked bronchial gland involvement, with signs of diffuse chronic bronchitis, and a history of persistent cough. No organisms were found in the sputum. Fixation in this case was 2 plus with Petroff's antigen and negative with Miller's.

One case of tuberculosis peritonitis gave a negative reaction with both antigens. The diagnosis was subsequently confirmed by findings at the operating table.

The case of cervical tuberculous adenitis had a chronic mastoid sinus with little tendency to heal. V. Pirquet strongly positive, complement-fixation negative.

In a case of tabes mesenterica, v. Pirquet positive, the serum gave an absolutely negative reaction with both types of antigens.

Among 28 cases, with no symptoms or signs of tuberculous infection, compliment-fixation tests revealed 3 strongly positive reactions, one faint inhibition, one suspicious reaction. One was a boy of 12 years with a definite rheumatic pericarditis, lungs clear, v. Pirquet negative. A second was an infant of 9 months with signs of an acute bronchopneumonia. It recovered completely. V. Pirquet negative. In both these cases the sera showed a 4 plus reaction.

The 3rd case was one of endopericarditis. Here the x-ray showed a faint lung shadow only suggestive of infiltration, but there were no physical signs, and the v. Pirquet test was negative. The cases with suspicious and slight inhibition reactions were an acute pneumonia and an acute endocarditis.

Conclusions. Complement-fixation tests for tuberculosis on the sera of 17 tuberculous infants and children with Miller's and

Petroff's antigen gave one 4 plus, one 2 plus and 2 suspicious reactions.

Complement-fixation tests on the sera of 5 children, probably but not definitely tuberculous, were all negative with both antigens.

Complement-fixation tests on 28 non-tuberculous infants and children gave three 4 plus and two suspicious reactions.

In view of the very favorable results reported by other men with the same antigens in general groups of individuals, before discarding the test for children, we should like to learn the experience of others in this field.

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Intra-Uterine Fractures (Annaes Paulistas de Medicina e Cirurgia, 1917, VIII, 245). In the case described by E. Pench the child screamed incessantly after its spontaneous birth, and palpation and radiograms confirmed the fractures of all the long bones, clavicles and ribs. On lifting the child it felt like a bag of cloth filled with pieces of glass. The fractures were easily reduced and held in place with cardboard splints. Roentgenography the tenth day showed consolidation of nearly all the fractures, with callus, and no crepitation could be felt anywhere. A few weeks later green diarrhea developed and the child died in two weeks. The parents and three other children are healthy. Whatever may be the explanation of these multiple fractures, a tendency to rachitis evidently coöperates.—*Jour. A. M. A.*

REPORT OF THE CORNELL NUTRITION CLASS

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It has been the custom at the Cornell Children's Clinic to inquire into the dietetic habits and hygiene of the so-called "delicate child" whenever this type of child presents itself to us for advice in the general run of patients in the childrens' clinic.

Because of the increasing number of these cases—children who keep so thin, do not eat anything, etc.—and the marked improvement following the special instruction given for the correction of the most prominent errors, it seemed advisable to try and improve our previous results by a more careful study of this group of children and to endeavor to discover and correct the causative factors. To this end the group or class method, so successfully worked out with "cardiacs," was planned.

Through the coöperation of Mr. Frank Manny of the Bureau of School Welfare, New York Association for Improving the Condition of the Poor, the Cornell Nutrition Class was organized May 1, 1917, and the following report is based on the work of this class from May to October, 1917, inclusive.

Schedule.—Monday and Wednesday 2—4 p. m.

Staff.

Physician—Owing to the scarcity of clinic assistants, one physician had entire charge of class.

Nurse—We were fortunate in having a nurse who had many years' experience in private homes with this type of case. She took charge of all home instruction and assisted in the clinic.

Social worker—Through the A. I. C. P. we had part time services of a social worker who assisted in referring cases to the clinic.

Two volunteer assistants for clerical work.

Routine of the Nutrition Class.

Initial Visit.—Each child was given physical examination; weight and height were taken. All necessary laboratory aids were used to assist diagnosis. Physical defects were noted; past and present complaints, dietetic habits and hygiene were carefully recorded on uniform blanks furnished by the A. I. C. P.

Instruction.—The importance of the correction of all defects having a bearing on the nutrition of the child was explained and the child was referred to the various departments of the Cornell Clinic for treatment. All errors of diet, hygiene and management were pointed out to the mother and her child and the urgency of immediate correction and supervision advised. Suitable *individual* diet prescriptions, with outline of future management, was given each child. The case was then turned over to the nurse who supplemented the physician's orders by more detailed instruction, giving cooking directions for diet ordered. An appointment was made for an early home visit. Children unaccompanied by mothers were given precedence in follow-up visits. The diet prescription consists of a printed slip having list of various articles of food and general directions. The food to be eaten was checked, frequency and portion inserted, suitable to the income and the requirements of each individual case. This method lays emphasis on the importance of the diet, and is better followed than the general diet list commonly used.

Home Visits.—This is the most important phase of the work. Here conditions and the problems of every day are encountered. The nurse consults with the mother and together they work out the problem of future management. To secure the coöperation of mother and child is essential for permanent results. Here the experienced and ingenious nurse is taxed to the utmost. The first visit is at least for one hour, subsequent visits may be a little shorter.

Boys' and Girls' Play Clubs.—Children living in the same neighborhood were organized into clubs, the child making the best progress or the natural leaders, being made captains. On warm days, the nurse would arrange through the captain to have the children meet at neighboring parks or playgrounds, giving us an opportunity of supervising the play to prevent fatigue, the latter being a great source of unnecessary loss of energy. The nurse would plan the play of the week, arrange for dental treatment and visits to the municipal bath. We found it of great advantage to keep our children together and away from the influence of their former playmates. Vacations in the country were arranged through the courtesy of Miss Givin of the A. I. C. P.; but these were too short to be of any value. We had no facilities or funds for giving relief and found no urgency for same.

Return Visits.—At first children reported each week, later, every two weeks, as the child's condition improved. Regular visits to the class and the strict following of orders were insisted upon, until the novelty of the régime wore off. At these visits, group or class instruction was used to advantage. Interest was stimulated by encouraging competition and awarding prizes for the greatest progress.

Source of Material.—Undernourished children were referred to us from the lists of the neighboring public school nurse, through the social worker of the A. I. C. P., and from our own clientele. The larger number came from the poorest sections of the city.

Total number of cases admitted 250. Cases making 1 or 2 visits 105 (not included in report). Total number of clinic visits 924 (boys, 439; girls, 485). Length of time under observation, 1 to 6 months; average, 3 months.

These observations were made during the vacation period, as this time offers an opportunity for better home and clinic control with the advantage of more out of doors and non-interference by the requirements of school attendance.

Nationality.

American	54
Italian	40
Russian	26
Irish	15
German	10
Total	145

Ages and Sex.

Ages	Boys	Girls
1 to 6 yrs.	10	16
6 " 10 "	22	32
10 " 12 "	15	12
12 " 14 "	14	11
14 " 16 "	10	3
Total	71	74

Grouping of Cases.—Some of the important physical characteristics of this group of children are as follows:

Under weight for age or height; under height; poor superficial circulation, as shown by lack of color of skin and mucous membranes, flabby skin and lack of muscular development; listless and of low vitality.

TABLE I.—DUNFERMLINE CLASSIFICATION.

Girls— Ages	1-6 yrs.	6-10 yrs.	10-12 yrs.	12-14 yrs.	14-16 yrs.	Total %
Nutrition 1	0	0	0	0	0	0
" 2	1	1	0	0	0	2 or 2.7%
" 3	5	8	5	5	0	23 or 31.0%
" 4	10	23	7	6	3	49 or 66.2%
Total............	16	32	12	11	3	74
Boys—						
Nutrition 1	0	0	0	0	0	0
" 2	0	1	0	0	1	2 or 2.8%
" 3	6	5	2	1	2	16 or 22.6%
" 4	4	16	13	13	7	53 or 74.5%
Total............	10	22	15	14	10	71

TABLE II.—WEIGHT-HEIGHT-AGE CLASSIFICATION.

Note.—Arbitrary limits of 10% above and below the normal standard for weight and 5% above and below the normal standard for height were used for *even weight* and *height*, while weights and heights above or below these limits were considered as *over* or *under*. Holt-Burk-Boas Standards used.

Girls— Ages	1-6 yrs.	6-10 yrs.	10-12 yrs.	12-14 yrs.	14-16 yrs.	Total %
Weight-Age Basis:						
Over Weight	1	1	1	1	0	4 or 5.4%
Under Weight ...	7	16	6	7	2	38 or 51.2%
Even Weight	8	15	5	3	1	32 or 43.2%
Weight-Height Basis:						
Over Weight	6	1	1	2	0	10 or 13.5%
Under Weight ...	7	21	5	7	2	42 or 56.7%
Even Weight	3	10	6	2	1	22 or 29.8%
Height-Age Basis:						
Over Height	3	4	2	3	0	12 or 16.2%
Under Height	7	9	0	3	2	21 or 28.3%
Even Height	6	19	10	5	1	41 or 55.3%
Boys—						
Weight-Age Basis:						
Over Weight	4	3	1	1	0	9 or 12.6%
Under Weight ...	5	10	7	12	9	43 or 60.1%
Even Weight	1	9	7	1	1	19 or 26.7%
Weight-Height Basis:						
Over Weight	2	6	1	3	1	13 or 18.3%
Under Weight ...	6	11	6	2	6	31 or 43.7%
Even Weight	2	5	8	9	3	27 or 38.0%
Height-Age Basis:						
Over Height	2	8	2	3	7	22 or 30.9%
Under Height	6	1	2	2	0	11 or 15.4%
Even Height	2	13	11	9	3	38 or 53.5%

TABLE III.—COMPARISON OF TABLES I AND II.

Dunfermline Scale—	Boys.	Girls.
Nutrition 3	22.1%	31.0%
" 4	74.6%	66.2%
Under Weight for Age........................	60.1%	51.2%
Under Weight for Height......................	43.7%	56.7%
Under Height for Age........................	15.4%	28.3%

Tables I, II, and III give a classification of the 145 cases reported on, according to the three common methods: The Dunfermline scale; the relationship of weight to height and weight to age. The Dunfermline scale takes into consideration the above characteristics and classifies in four grades of nutrition; 1. superior; 2. passable; 3. poor; 4. very bad. This scale is of value as a quick method of classifying large numbers of children.

In examining children they should be stripped, weighed and measured. Superficial inspection passes the child with the round face and undernourished body. For adequate diagnosis the weight-height-age relationships should be utilized. (See tables III. and IV.

TABLE IV.—DISTRIBUTION OF DUNFERMLINE SCALE GROUPS ACCORDING TO

	Boys—Total 71.			Girls—Total 74.		
Weight-Age Basis:	N.(2)	N.(3)	N.(4)	N.(2)	N.(3)	N.(4)
Over Weight	1	5	3	1	1	2
Under Weight	1	7	35	0	11	27
Even Weight	0	4	15	1	11	20
Weight-Height Basis:						
Over Weight	0	5	8	0	5	5
Under Weight	0	8	23	1	11	30
Even Weight	2	3	22	1	7	14
Height-Age Basis:						
Over Height	1	7	14	2	5	5
Under Height	0	3	8	0	5	16
Even Height	1	6	31	0	13	28

The following summary of physical defects found in this group of children are the results of continued undernourishment, as well as contributing causes:—

Defective vision	6.2%
Defective hearing	.6%
Hypertrophied tonsils (requiring removal)	5.5%
Hypertrophied tonsils (requiring observation)	13. %
Adenoids	2.7%
Pulmonary—bronchial glands (tuberculous)	2. %
Cardiac—functional	8.9%
Cardiac—organic	6.8%
Nervous—chorea	2. %
Orthopedic—flat feet, round shoulders (posture)	26. %
Defective teeth—(in need of immediate care)	54. %

Of the previous contagious diseases reported to have preceeded the present condition: Measles—35% of cases; pertussis—20%; scarlet fever, 10% and diphtheria, 4%. The poor resistance of the malnourished child to these diseases and their sequelae, are well known.

Other Previous Illness and Complaints.—The following group of symptoms are increasingly common complaints of this type of child:—

Constipation	48%
Recurrent vomiting	31%
Recurrent bronchitis	23%
Asthmatic bronchitis	15%
Rheumatism (as manifested in children by tonsilitis, growing pains, anemia, etc.)	21%

Dietetic Habits.—Some of the gross errors of diet and habit were as follows:— 71% indulged in sweets to excess; 23% drank tea and coffee; 23% drank beer. Eating too fast; irregular meals; food between meals; improper or badly cooked and insufficient food and lack of sleep were also common causative factors.

It is well known that children have a predilection for highly flavored food. This is partly due to the fact that such food acts as a stimulus to their disordered appetites and pampered palates, and partly because they have been habitually fed in accordance with the tastes of their elders.

The common dislike for plain, building foods such as cereal, vegetables and milk, due to the above diet and habits, is a serious problem. From the time the child gets its first taste of table food it demands and gets everything in sight. These errors of diet and habits, while due in a great part to ignorance of food values, is in the main due to lack of home training. After the mother has been educated as to preparation and purchase of food. then there is still the problem, *will the children eat?* To get the coöperation of the child has been found a most difficult task, but not an impossible one.

Poverty, while a factor in the nutrition problem, is not so great a one as we have been accustomed to think. It is not altogether lack of money, but money spent unwisely, without adequate return of food value, that results in underfeeding. Our work was only educational and we gave no financial assistance, yet of the 145 cases, 128 or 88% gained weight, and 105 or 74% showed 2.21 times the expected gain for the period under observation. Tables V and VI give the results in detail.

TABLE V.—RESULTS IN DETAIL.

Number making gain in Weight.		Number who remained same Weight.		Number who lost Weight.	
Boys........	65	Boys........	4	Boys........	2
Girls........	63	Girls........	5	Girls........	6
Total......	128 or 88 %	Total......	9 or 6.2%	Total......	8 or 5%

Number who gained more than expected gain.	Number who gained average expected gain.	Number who gained less than expected gain.
55 Boys or 77% gained 2.27 times expected gain.	2 Boys gained average expected gain.	8 Boys gained less than expected gain.
53 Girls or 71% gained 2.1 times expected gain.	1 Girl gained average expected gain.	9 Girls gained less than expected gain.
—	—	—
108 Total or 74% gained 2.21 times expected gain.	3 Total or 2% gained average exp'd gain.	17 Total or 11% gained less than exp'd gain.

(Taking the expected gain for the period of observation, based on the annual gain for age.)

Number who increased in Height.	
Boys..	29
Girls..	36
Total..	65

or 41% showed increase in Height.

INDIVIDUAL GAINS IN WEIGHT AND HEIGHT.

WEIGHT.

Lbs.	Boys.	Girls.
½ lb..........	7	3
1–2 "	16	13
2–3 "	12	12
3–4 "	9	9
4–5 "	5	9
5–6 "	3	7
6–7 "	7	1
7–8 "	1	2
8–9 "	1	1
9–10 "	..	2
14– "	2	1
15– "	..	1
20– "	1	2
23– "	1	..
	65	63

HEIGHT.

Inches.	Boys.	Girls.
½ in..........	8	2
1–2 "	7	10
2–3 "	6	7
3–4 "	5	..
4–5 "	1	10
5–6 "	2	4
6–8 "	..	3
	29 or 40%	36 or 48%

Total number of cases. 145—71 Boys; 74 Girls.
Period under observation. 1 to 6 months; average 3 months.

TABLE VI.—DISTRIBUTION OF GAIN IN WEIGHT AND INCREASE IN HEIGHT.

	Gained Weight. Girls.	Gained Weight. Boys.
Weight-Age Basis:		
Over Weight	3	4
Under Weight	33	36
Even Weight	27	25
Weight-Height Basis:		
Over Weight	7	8
Under Weight	36	36
Even Weight	20	21
Height-Age Basis:	Increased in Height.	Increased in Height.
Over Height	3	10
Under Height	8	8
Even Height	18	18

The results obtained in a dispensary class of patients must be far from ideal at best, yet our children did wonderfully well. The general impetus given the home and the child in the right direction is of far more value than the weight increase, although the latter is of great moment to mother and child.

Through the correction of physical defects having a bearing on the nutrition of the child, through the correction of home conditions, dietetic habits and hygiene, by education without monetary assistance, these results have been obtained.

How may this progress be prevented from being only temporary? It seems that here the school could play an important part. The great influence of the teacher especially among the poor, could be used to great advantage. The child of to-day, whatever his social position may be, usually gets what he asks for. The child who eats what is put before him, without question. is a rare find. Possibly through school lunches, where the habit of eating plain, building food in company with other children would create a wholesome appetite for it, a result could be obtained that would be permanent. Through the child the home would receive the education in food values and proper dietetic habits. Get the *child to demand the proper food* and the problem of undernourishment will be met more than half way.

601 W. 177th Street.

B. INFLUENZAE AND PRESENT EPIDEMIC (The Lancet, London, July 13, 1918). Little, Garofalo and Williams are of the opinion that although the epidemic now prevailing in Europe has been called influenza for the want of a better name, it cannot properly be considered such for the following reasons: 1. The clinical course, though similar to that of influenza, is of very short duration, and there is, so far as they have observed, an absence of relapses, recurrence or complications. 2. The present epidemic is not characterized by a sharp leukocytosis and polynucleosis, but rather by a very slight leukocytosis with a proportional lymphocytosis of the small mononuclear variety. 3. The organism of influenza, namely, *B. influenzae* was in all cases absent and there was present with no exception a gram-positive diplococcus.—*Jour. A. M. A.*

MISCELLANIES

LETHARGIC ENCEPHALITIS*

Col. E. Farquhar Buzzard thought that the medical profession had never realized that encephalitis, or inflammation of the brain, was by no means an uncommon condition. He was convinced from his own experience that a large number of cases of epilepsy, of mental deficiency, of hemiplegia, and of diplegia, were the permanent results of attacks of encephalitis occurring in early childhood, many of these disabilities dating from an illness occurring in the first few years of life, the history being that a healthy child had been taken ill suddenly with convulsions, fever, vomiting, etc., and that the diagnosis of meningitis, or gastritis, or teething, had usually been made; he thought that this large group of cases could be properly attributed to the virus of poliomyelitis. It should be remembered that there was a form of encephalitis which had the constitutional disturbances, the age incidence, the seasonal exacerbations, the sporadic and epidemic types, and the immunity from second attacks which were shared by measles, scarlatina, and other acute specific fevers, and that it presented an inflammatory lesion of a particular tissue in the same way as typhoid fever, diphtheria, and smallpox displayed inflammatory lesions of other tissues. This form of encephalitis had been shown to be due to the virus of poliomyelitis, and it should be noted that the disease was an acute one, running its course in a few days, but often leaving permanent results in the form of paralyses, mental defects, and epilepsy.

Lethargic encephalitis was an entirely different disease, the symptoms often being present for days or even weeks before the intensity of the process reached its height; the age incidence and seasonal incidence also were entirely different from those of poliomyelitis.

Three groups of cases were recognizable: (1) Those in which the infection mainly attacked the brain stem, the patients suffering from asthenia, lethargy, and disorders of ocular movements such as strabismus, diplopia, nystagmus, and ophtalmoplegia.

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*Abstract of paper read before the Medical Society of London. British Medical Journal, December 21, 1918.

(2) Those giving the clinical picture of acute paralysis agitans, with the same constitutional disturbances, but displaying no oculomotor signs or symptoms. These were examples of encephalitis with its chief incidence on the basal ganglia, and in particular perhaps on the globus pallidus. (3) A third group, which he intended to consider, in which the force of the inflammation was spent upon the cerebral cortex, causing difficulty in diagnosis in regard to the possible presence of cerebral tumor, cerebral abscess, or cerebral hemorrhage. An account was then given of 4 fatal cases, in 2 of which Colonel Sargent had operated on account of obviously increased intracranial pressure. All 4 patients were over 40 years of age, but none of them presented cardiovascular changes suggesting the possibility of cerebral hemorrhage as a diagnosis. In none did the clinical history conform closely to that of cerebral hemorrhage, but suggested some more subacute lesion, and naturally gave rise to the question of abscess or syphilitic thrombosis. In all 4 cases the Wassermann reaction of the cerebrospinal fluid was negative. He had learnt from this experience that patients over 40—and even over 50—years of age might be the victims of encephalitis producing the general symptoms of hemiplegia, aphasia, hemianesthesia, or hemianopia, and that a naked-eye examination of a brain on the postmortem table was not sufficient to discriminate between an ordinary cerebral hemorrhage and a hemorrhage which was only an accidental occurrence in the course of an encephalitis. When no gross signs of disease were obvious in the cerebral arteries to account for a hemorrhage, it was essential that microscopical investigation should be carried out in order to determine the cause for the blood extravasation. We must look on the presence of thrombosed cortical veins associated with hemorrhage in the neighboring brain substance as strongly indicative of an inflammatory process.

Microphotographs were shown illustrating the pathological lesions found in the brains of the patients whose histories had been given, the remarkable way in which the vessels of the brain reacted to this inflammatory process being apparent. The chief features were: (1) perivascular infiltration, mainly with small round cells; (2) small capillary hemorrhages, suggesting a gradual oozing of blood through the damaged walls of small veins and capillaries; (3) thrombosis of small and middle sized vessels in different states of organization; (4) ischemic softenings presenting the appearance of the hemorrhagic infraction seen in other organs; (5) subarachnoid hemorrhages and cellular infiltration of the leptomeninges; (6) general neuroglial proliferation; (7) changes in nerve cells, which in some places showed chromatolysis and in others a process resembling coagulation necrosis.

Lethargic encephalitis was not a new disease, endemic cases occurring from time to time. The author said we were not yet in a position to know what was the nature of the infection, or to point to any method of treatment likely to abort or cure the disease. The experience of these 4 cases led him to think that operative intervention in the way of decompression was really contraindicated in spite of the presence of increased intracranial tension. Three of the patients died, partly at any rate, from hemorrhage, and it was hard to believe that decompression could be beneficial when this hemorrhagic tendency existed.

With regard to prognosis, at present he could only say that some cases recovered completely, others survived the acute stage, but carried with them in after-life permanent defects due to the morbid process, whilst a certain number died either from toxemia or hemorrhage in the acute illness, or from some complication following it.

THE CARE OF CHILDREN AFTER CONTAGIOUS DISEASE *

After any one of the so-called "contagious diseases" (scarlet fever, measles, diphtheria, whooping cough), a child loses strength of the organs (heart, kidneys, lungs), often becomes weak and is more likely to suffer from other illness. This is true even when the attack has been very mild. The damage to the heart, kidneys or other organs, may be very slight at first and may not be discovered in time unless the child is under a doctor's care, both during the sickness and for a number of weeks after. It is a mistake not to call a doctor just because a contagious disease happens to be very mild. The organs of children are injured for life because no doctor was called, or because his advice was not allowed.

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* From the Weekly Bulletin of the Department of Health, City of New York, May 25, 1918.

SLEEP, REST, GOOD FOOD AND FRESH AIR ARE NECESSARY.

Rest: After contagious disease, a child should have from ten to twelve hours of undisturbed sleep daily. If possible it should sleep alone and in a room with windows wide open. One hour's quiet rest after each meal is important; it allows the body to use all of its strength in digesting the food. At first, such a child should not be up on its feet more than four hours a day, and it should not be allowed to walk up or down stairs, or play violently for at least a week, or, until its strength has returned. Remember that the nerves, as well as other parts of the body, are weak and easily tired; therefore see that the child is not frightened, worried or excited.

Fresh Air: Keep the child out of doors; in the park, on the recreation pier or open playground, as much as possible, or else on the fire-escape or roof. If this is not possible, see that the child gets plenty of fresh air by keeping the windows open at least half way. Be sure that the windows are open in the room where the child sleeps. If children are warmly dressed they do not catch cold even from cold fresh air.

Food: Watch your child's diet. Tea, coffee, pastry, beer or wines are bad for even well children; they are poison to the sick child. Three meals daily of milk broth, cereals, bread and butter, potatoes, rice, vegetables and cooked fruit should be given. If the child is hungry, crackers and milk should be given between meals. For feeble children and for those between the ages of two and five years, soup or bread and milk may be allowed with fruit juices at times. Other foods should be given only after asking the doctor.

WATER INSIDE AND OUTSIDE.

After any disease, the kidneys, bowels and skin have to get rid of much poisonous matter which the sickness has produced. Give your child three or four glasses of water during the day between meals. This will help the kidneys do their work properly.

A warm bath each day will help the skin get rid of waste matter.

One easy movement of the bowels is necessary each day.

DEPARTMENT OF ABSTRACTS

ORIGINAL CONDENSATIONS OF CURRENT PEDIATRIC LITERATURE BY THE EDITOR AND FOLLOWING ASSOCIATES

T. Wood Clarke	Utica, N. Y.	Stafford McLean	New York City
Charles E. Farr	New York City	Carlo D. Martinetti	Orange, N. J.
Howard K. Hill	Philadelphia, Pa.	Mills Sturtevant	New York City
William Lyon	Jackson, Mich.	Samuel W. Thurber	New York City
John B. Manning	Seattle, Washington	Eugene F. Warner	St. Paul, Minn.

KAHN, MORRIS H.: SERUM TREATMENT OF POSTINFLUENZAL BRONCHOPNEUMONIA. (Journal A. M. A., January 11, 1919, p. 102.)

The author, in a series of 25 cases of postinfluenzal bronchopneumonia with clinically grave prognosis, toxemia, extreme dyspnea and cyanosis and extensive lung involvement, treated with serum from convalescent influenzal bronchopneumonia patients, summarizes as follows: The mortality, as determined from the final disposition of the patients in this series, was 48 per cent. Eighteen other patients with prognosis equally grave clinically were used as controls and treated like the others, but without the use of serum, with a mortality of 66.6 per cent. He believes this method deserves further trial and that the serum may, perhaps, act as a favorable antitoxic factor in the circulation to assist in the general reaction to the pathologic process.

C. A. LANG.

HESS, ALFRED F.: THE SIGNIFICANCE OF TUBERCULOSIS IN INFANTS AND CHILDREN. (Journal A. M. A., January 11, 1919, p. 83.)

The author states that the statistics of infant mortality that show the ratio of deaths from tuberculosis compared to other diseases, do not give a true conception of the importance of tuberculosis at this period of life. To arrive at a better understanding of this problem, we must prepare figures showing the absolute number of deaths annually. He found that in no one year did the deaths from tuberculosis exceed those of the first year of life. This great loss was due in part to the peculiar susceptibility of infants; in part to the fact that they received an exceptionally large amount of the infective material. The dosage was large, not only in an absolute sense, in the number of bacilli conveyed by the mother or other infected individuals, but also from a relative point of view, when the comparatively small size and weight of the baby was considered. Bovine infection plays a part that is minor but not negligible. He advises cultural studies of tuberculosis in infants from time to time, in order to gain an insight into the degree to which milk employed for infant feeding is contaminated by virulent tubercle bacilli.

Following the period of infancy there is a quiescent phase in the mortality from tuberculosis, throughout which the deaths decrease year by year, although the number of infections, as shown by the tuberculin reaction, steadily increases. He thinks these infections are due probably to latent carriers, to individuals who from time to time shed tubercle bacilli.

There is a second active phase in connection with the mortality from tuberculosis. This period is not coincident in females and males. Among the former it sets in rather sharply at the age of 12, whereas, among the boys the flare up does not manifest itself until the age of 16. This uniform periodicity in the increase of deaths from tuberculosis, is due, he believes, to an "autogenous reinfection" from some latent focus, rather than a fresh infection from a tuberculous individual.

The author believes that much good could be accomplished in combating tuberculosis both in infants and at puberty by providing country preventoriums. In view of the mortality incidence outlined above, he deems it advisable to change the present usage in regard to the older children and to restrict these institutions to girls from the ages of 10 to 16, and to boys from 14 to 18. In this way provision would be made for hygienic measures two years before the onset of the second period of high mortality.

C. A. LANG.

ZAHORSKY, JOHN.: THE REMOTE RESULT OF TONSILLECTOMY IN THE YOUNG CHILD. (Interstate Medical Journal, January, 1919.)

Zahorsky has made clinical observations in 150 children, as to what effect the removal of tonsils and adenoid vegetations had on the nutrition and health of the child 6 months to 5 years after the operation. He concludes that tonsils and adenoid vegetations should be removed at any age when they become diseased and useless. When the pharyngeal tonsils become permanently enlarged, so as to cause persistent mouth breathing and deafness, they should be removed. When the tonsils are imbedded and cannot discharge their contents with resulting abscess formation, if scarred from scarlet fever, diphtheria, or a severe steptococcus infection, or an infected tonsil which leads to persistent adenopathy, and does not yield to a few weeks' medical treatment, they should be removed. He also advises operation in those children who have had an attack of endocarditis preceded by tonsillar infection. However, since the remote results of tonsillectomy in the young child have not been sufficiently studied, and as there is probably an increased tendency to pneumonia in such children, he makes a plea for a conservative attitude toward the question of tonsillectomy in the young child. He claims the tonsils should not be removed for fancied or trivial causes in a child under 7 years of age. C. A. Lang.

Taylor, Rood: The Relationship Between Tonsillar Infection and Recurrent Vomiting. (Minnesota Medicine, February, 1919.)

In most cases of recurrent vomiting of childhood, the author has found that infection of the lymph adenoid tissues in the nasopharynx is an important etiological factor. In a study of the case records of the 47 patients treated in the Mayo Clinic, the evidence obtained is summarized as follows:

In 40 cases there was evidence of tonsillar or adenoid disease. In 6 of the 24 patients whose tonsils and adenoids were removed, no further information could be secured. One of the remaining 18 patients is unimproved; five are very much improved, and 12 have had no attacks since operation, this period varying from 7 months to 6 years. C. A. Lang.

Sharpe, C. T.: Edema of the Brain in the Infectious Diseases. (Journal A. M. A., January 18, 1919, p. 159.)

The author claims that edema of the brain may and does appear at different periods in the course of the infectious diseases. When it occurs early it may hide the true nature of the illness and it has been noticed on several occasions that with the predominance of this feature there may be an atypical rash and the picture sc unusual that grave doubt arises as to the basic diseases. When it appears late the difficulty is greatly increased.

The recent epidemic of poliomyelitis offered unusual advantages for the clinical study of edema of the brain. The mental attitude of the patients was one of the most striking features, and all variations from hyperexcitability to melancholia, associated with and without paralysis, but always with edema, were noted. It will not be so readily admitted that in the infectious diseases the same condition is to be found; nevertheless, it is possible to establish by the same signs and symptoms the same clinical facts and to confirm these in various ways.

From the very beginning, the mental symptoms may predominate; or they may not develop for from 24 to 48 hours or longer after the onset. They may not develop until the third week, and again, they may not be sufficiently evident until after convalescence is well established. The cerebral manifestations may mask the cutaneous evidence of the disease to such an extent that the cerebral type of the infectious disease must be recognized as an entity.

He concludes that there is an interrelationship between the cerebrospinal pressure and that of the cutaneous circulation, and that this relationship is one of direct variation. That the outbreak of a marked cutaneous eruption in a case presenting symptoms of intracranial pressure is a favorable prognostic omen, these cases recovering. Lumbar puncture is advised, also white light and electric baths, the latter favoring an increased cutaneous circulation. C. A. Lang.

Stetten, DeWitt, and Roberts, Dudley: Ventricular Drainage by Puncture of the Corpus Callosum. (Journal A. M. A., January, 1919.)

This is the report of a case of epidemic cerebrospinal meningitis, which had been running a relatively normal course, rather suddenly developing signs and symptoms pointing to an acute obstructive hydrocephalus. The patient rapidly passed into a state which was little short of moribund, and a puncture of the corpus callosum to establish ventricular drainage was deliberately decided upon and performed. The fact that the fluid from the ventricles was entirely different in character from the last fluid by lumbar puncture, and the manner in which the fluid gushed from the canula, proved conclusively that the diagnosis of ventricular block was verified. Examination of the ventricular fluid showed no evidence of active meningococcic inflammation within the ventricles. The immediate postoperative improvement in the patient was almost miraculous, and was hard to realize by one who had not actually observed the change. Roberts and Stetten advocate puncture of the corpus callosum for ventricular drainage as a rational, life saving procedure when the clinical picture of ventricular obstruction appears in the course of cerebrospinal meningitis. When, in addition to ventricular blocking, there appears to be an actual infection of the ventricle, that is, when the ventricular fluid is turbid or frankly purulent, or when diplococci are found in the smear, intraventricular administration of antimeningitis serum should be combined with puncture of the corpus callosum. Care must be taken to inject less serum into the ventricles than the amount of fluid withdrawn.

C. A. LANG.

LEWIS, JULIAN H.: SLOW INTRAVENOUS INJECTION OF ANTISERUM TO PREVENT ACUTE ANAPHYLACTIC SHOCK. (Journal A. M. A., February 1, 1919, p. 329.)

From the beginning, the great danger of serum therapy has been serum sickness, the occurrence and severity of which can never be predicted. Lewis, in his experiments with dogs, rabbits and guinea pigs, as to the prevention of this unfortunate reaction, has come to the following conclusions:

Acute anaphylactic shock can be prevented in sensitized experimental animals by giving otherwise fatal doses of diluted antigen intravenously at very slow rates. So far as these results can be applied to man, it is to be recommended that when immune serum must be given intravenously, it should be given slowly and in a diluted form, the Woodyatt pump serving as an excellent means of doing so. The exact quanitative relations must be worked out experimentally with patients. At present it can only be said that the injections should be made as slowly and the dilutions as high as is convenient or necessary under a given set of conditions.

C. A. LANG.

CARR, JAMES G., AND MOORHEAD, LOUIS D.: GAUCHER TYPE OF SPLENOMEGALY. (Journal A. M. A., January 4, 1919, p. 19.)

The authors report a case of Gaucher's type of splenomegaly in a man aged 46 years. There was a history of a tumor in the left side of the abdomen since the age of 9 years. The tumor gradually increased in size, though the patient's general health was always good. The tumor produced neither pain nor tenderness, the first symptom being difficulty of respiration. The patient was very emaciated, and yellowish looking. There was no general adenopathy. The spleen extended to within 5 c.m. of the symphisis pubis and the liver was palpable 10 c.m. below the costal arch. The lower extremities were moderately swollen. The blood picture was typical: hemoglobin 35 per cent: erythrocytes 2,240,000: leukocytes 3,200. Differential white count revealed: small mononuclears, 17; large mononuclears, 12; polymorphonuclears, 68; eosmophils, 1; transitionals, 1; myelocytes, 1. A splenectomy was performed preceded by a transfusion of 600 c.c., and the day following operation the transfusion was repeated. The patient made an uneventful recovery. Seen 21 months after splenectomy, the blood findings were approximately normal, but there was no diminution in the size of the liver.

C. A. LANG.

ELMSLIE, R. C.: PSEUDOCOXALGIA FOLLOWING TRAUMATIC DISLOCATION OF THE HIP IN A BOY AGED FOUR YEARS. (Journal of Orthopedic Surgery, February, 1919, p. 109.)

The author reports a case of dislocation of the left hip in a boy 4 years of age. The dislocation was reduced and the hip fixed in plaster of Paris for 2 weeks. The plaster was then removed and the hip left to recover its mobility. One year later he complained of pain in the hip after walking, but never any pain at night. X-ray showed a roughening of the head of the femur, at first thought to be due to tuberculous disease, but later recognized as pseudocoxalgia. There was distinct irregularity of the epiphysis of the head of the femur, with thinning where the upper margin of the acetabulum pressed upon it, and also broadening of the neck of the bone, which was to some extent overlapped at the edges by the epiphysis. The hip was kept in plaster of Paris for 5 months until recognized as pseudocoxalgia, when all treatment was stopped and the boy was allowed to walk freely on the limb. Four years later an x-ray showed great thickening of the neck of the femur, and a very broad epiphysis, which, however, then had a smooth upper surface. The author suggests that the condition is caused by an interference with the nutrition of the bony nucleus, due to an injury to its vascular supply, which at this period must be conveyed in the ligamentum teres. An injury to this ligament might well occur in a traumatic dislocation of the hip and also in the reduction of a congenital dislocation. At a later stage, when the neck of the femur is less cartilaginous, it is likely that a considerable vascular supply may reach the epiphysis of the head of the bone through the retinacula. Possibly when the supply through the ligamentum teres is sufficient, that through the retinacula increases, and this increased vascularity around the neck of the femur may help in causing the thickening of the femoral neck. C. A. Lang.

Kerley, Charles Gilmore: Twenty-six Cases of Hypertrophic Stenosis of the Pylorus in Private Practice, with Operation by the Rammstedt Method. (Journal A. M. A., January 4, 1919, p. 16.)

Twenty-six cases of hypertrophic stenosis of the pylorus, occuring in the author's private practice during the past 4 years which have been operated on by the Rammstedt method are here reported. The mortality was 15.3 per cent. Of these cases, 17 were boys and 9 were girls. The ages at the time of operation ranged from 3 to 16 weeks. In all but 6 cases the weight at operation was below the birth weight. They all made an initial gain in weight until the onset of vomiting, from which time there was a rapid loss. The onset was abrupt in all but one case. The vomiting was projectile in every case. In 23 cases there was vomiting after every feeding. In 24 cases there was retention of food 3 hours or more after feeding. The urine and stools were very scanty in all. Peristaltic waves were visible in every case and a tumor was palpable in all but one.

Kerley claims that a low mortality in these cases of hypertrophic stenosis of the pylorus depends on early diagnosis and immediate operation. The presence of a palpable tumor demands prompt surgical interference. The longer operation is delayed in a case with a well marked tumor the greater the surgical risk. This does not mean, however, that a child with a palpable tumor cannot recover without operation. Operation by the Rammstedt method (which means a rapid operation) will insure a mortality of about 5 per cent in patients that have not vomited more than 2 weeks. The surgical risk that the patient offers depends in large measure on the duration of the vomiting. It is assured, of course, that adequate after-care, which includes the use of breast milk, is supplied.

A false security in these cases is assumed from the fact that the loss in weight is often temporarily arrested or perhaps has not been excessive. Sudden and unexpected death in the palliatively treated cases of pyloric stenosis is not uncommon. Acidosis, due to defective urinary secretion with retention of acids, may explain these sudden deaths. C. A. Lang.

Meyer, A.: Edema without Albuminuria in Infancy. (Medical Review, January, 1919, p. 12.)

In German prison camps and among sections of the German civil population numerous cases of edema have been observed due to an inadequate diet. The author reports a case of a male child, 4¾ years of age, born at term, had been bottle fed for the first year, and had suffered from a slight degree of rickets. He walked when 14 months old. The only infectious disease he had suffered from was whooping cough, but from early infancy he had been subject to almost constant diarrhea, the stools being watery with mucus. There had been occasional attacks of vomiting and umbilical colic. He had been fed for a long period on an almost exclusively starchy diet, and the milk supply was limited to buttermilk gruel, given only 2 or 3 times a week. Bread, oatmeal gruel and potatoes had been his staple diet, and only at rare intervals had he been given fish.

He was thin and his temperature was subnormal. His feet and legs were edematous, and the somewhat distended abdomen was tympanitic, and showed no signs of ascites. The tongue was clean and the gums were healthy. The tonsils were slightly large and some of the teeth were carious. The heart and lungs were normal, liver and spleen were not enlarged and the genitals were normal. The urine was alkaline and contained no sugar, albumin or pus. The amount of chlorides in the urine was small, and the hemoglobin was 77. The edema spread to the hands and face, ascites and hydrothorax developed, and he became drowsy. Milk and fish were added to his diet, but the edema became still worse, the abdomen and back also being involved, and the scrotum and penis enormously hydropic. His limbs were cold and cyanosed, but the pulse continued strong and regular. The amount of urine passed in the 24 hours was at first only 100-200 c.c. and the amount of chlorides was still small. When, however, grapes, citric acid, yolk of egg, sugar and watercress were added to an almost salt free diet of fish, potatoes, bread and butter, the edema vanished with astonishing rapidity. The ascites and diarrhea took a week to disappear. With the cessation of the edema he became more lively and his appetite improved greatly. The excretion of chlorides also increased steadily, and he was soon able to tolerate salt in his diet without a return of the edema.

C. A. LANG.

GARBAT, A. L.: SODIUM CITRATE TRANSFUSIONS. (Journal A. M. A., January 4, 1919, p. 1.)

In a series of 100 sodium citrate transfusions for varied pathological conditions, Garbat summarizes as follows:

Absolute cure from infusion of blood can be ascribed to only comparatively few types of disturbances. It undoubtedly is a life saver in patients suffering from hemorrhage of whatever origin. In the numerous other conditions for which transfusion is given or advised, it is the most efficient means for prolonging patients' lives in comfort or for aiding them to recover much more quickly than they otherwise would. All these indications are fulfilled by the sodium citrate method of transfusion just as successfully as by the other methods of whole blood transfusion, and much more easily. In fact, it is the only means that is feasible under some circumstances, for example, the present day indications on the battlefield. Here large quantities of blood of each group can be held in readiness for any emergency and, if necessary, can be given in the field. The citrated blood will keep well for days or even weeks. It is true that uncomfortable reactions follow infusion of citrated blood more often than unmixed blood, but in no way have these been harmful to the patient or interfered with the fresh blood's favorable effect. The cause of these reactions has not been definitely established. Several factors will probably have to be taken into consideration. The author believes that some change occurs in one of the blood constituents, possibly the platelets or leukocytes. This results in the chill and the subsequent fever which resembles so closely the symptoms following intravenous administration of vaccines and proteins. In any event, all attempts should be and are being made to eliminate this reaction. In this series of cases the favorable results compare almost absolutely with those obtained by other authors using unmixed blood. It should therefore, except only in special instances, be adopted as the routine method, since both the clinical and the laboratory findings support this view. C. A. LANG.

CONDIT, J. C.: RESULTS FROM PERTUSSIS VACCINE. (California State Journal of Medicine, December, 1918, p. 529.)

In June last, whooping cough being prevalent in the neighborhood of the Boys' and Girls' Industrial Home and Farm, Lytton, California, where 200 children are cared for, the author inoculated 28 of the younger children, their ages ranging from 9 months to 7 years. They received three injections of 50 million, 100 million and 250 million at three-day intervals.

About August 1 the first cases of whooping cough developed, three of the older boys being affected. Beginning August 6 there were inoculated all those not previously treated who gave no history of having had the disease, 128 in number. These received three injections of 500 million, 1000 million and 2000 million at 48-hour intervals. No reaction occurred. One boy of 8 by mistake was given two injections the same day, but no reaction followed.

Within 2 weeks 11 cases developed among them and 10 days later one more case was reported. Since then there has been no further spread of the disease. One among the 28 little children inoculated in June was affected.

The children were practically all exposed, as they met in the common dining room with the 3 first affected a week before these were isolated. Those who developed the cough were placed in a separate cottage, but the isolation was relative only.

Five who had active pertussis at the time of inoculation had less severe paroxyms thereafter. One boy went through the attack without vaccine treatment. His case ran the most severe course of all. Those who developed the cough after being inoculated had the disease in light form. At present, September 21, there is no whooping cough at the home. The epidemic seems to have been controlled by the use of vaccine.

HAROLD R. MIXSELL.

BEGLE, HOWELL L.: A CASE OF CONGENITAL PTOSIS. (Journal of the Michigan State Medical Society, February, 1919, p. 55.)

Begle reports a case of a child who exhibits a failure of development in that she is unable to elevate the upper eyelids sufficiently. The lids droop and she has a sleepy expression. Vision is interfered with, for while the pupil lies in the palpebral space when she looks downward: it is covered by the lid when she looks upward. The condition is designated congenital ptosis and results from lack of development of the levator muscles. Unlike acquired ptosis, resulting from paralysis of the third nerve, both eyes are usually affected. Sometimes a few fibres of levator muscles are apparently present, for the eyelids can be partially raised by them. A Hess operation was performed on the upper lid which consisted of an incision made along the entire length of the eyebrow. The skin of the upper lid was dissected loose to the lid margin. Three double-needled sutures were then introduced through the lid near the lid-margin and were brought out through the skin of the forehead a few centimeters above the brow, where they were tied over gauze rolls. The original incision was then closed. The sutures were left in place for 2 weeks. The aim of the operation is to cause a growth of connective tissue along the threads and form tendinous outshoots from the frontalis to the skin of the lid, thus reinforcing the action of that muscle. C. A. LANG.

BROWN, ALAN, SMITH, GEORGE E., AND PHILLIPS, GORDON: AUTO-SERUM TREATMENT OF CHOREA. (Canadian Medical Association Journal, January, 1919.)

In a series of 23 cases of chorea, treated with auto-serum and observed over a period of almost a year and a half by Brown. Smith and Phillips, 77 per cent were cured, 19 per cent improved, and one case unimproved, this one having refused further treatment on account of a severe reaction. Of the cases observed over this period of time there has so far been no recurrence. In all instances, except 6 in which tonsils were removed, there were observed what were apparently foci of infection, which were attended to after the course of treatment. Of the 23 cases, 17 were of mild degree and 5 were severe. In 4 instances the duration of the disease was over a year, while the remainder showed symptoms on an average of six and a half weeks' standing. The average number of injections given were 3; several were given only one injection, while in one instance 5 were administered before a cure was affected. The average amount of serum injected was 17 c.c. Nineteen cases were cured in 3 weeks and 4 were cured within one week. All the severe cases required more than one injection.

In practically every instance there had been previous medical treatment given with the usual indifferent and unsatisfactory results. In most cases there was a mild reaction in the form of vomiting and an occasional rise of temperature; on only one occasion was the reaction of such a nature as to prevent the return of the patient to the clinic and that owing to parental objection. The withdrawal of an amount of spinal fluid, equal to that of serum injected, did not appear to be necessary. Failure to obtain satisfactory results and prompt reaction may be due to the lack of sufficient antibody production in the plasma.

C. A. LANG.

MURRELL, THOMAS W.: REPORT OF CASE OF SYPHILIS OF THIRD GENERATION. (Virginia Medical Monthly, February, 1919; p. 285.)

Syphilis transmitted to the third generation has always been a clinical belief and Murrell reports a case which, as far as possible, was proved by the Wassermann. The mother having an eruption on her upper lip, papular in type and suggestive of syphilis, but with no history, had a Wassermann which was positive. The father's Wassermann was negative. Her father had died of paralysis several years before and several years before death he had leg ulcers so severe as to necessitate the amputation of one leg below the knee. Her mother, who was then 60 years of age, developed at this time a well marked paresis, but refused a Wassermann. Her son, 9 years of age, had a typical gumma on his left tibia. His Wassermann was distinctly positive. Both the maternal grandfather and grandmother gave histories that were decidedly specific. The mother and son had active syphilis demonstrated by the Wassermann and the father was negative.

C. A. LANG.

Fry, Frank R.: A Case of Congenital Double Facial Paralysis, Accompanied by an Absence of Lateral Movements of the Eyeballs, Mandible and Tongue. (Medical Press, January 8, 1919, p. 30.)

Fry's case was a female, 11 years of age, with complete double facial paralysis. There was no mobility whatever except a slight drawing-down at the corners of the mouth, more marked on the left side; this was evidently accomplished by the platysma. There were no lateral movements of either eyeball although there was a good range of vertical movement. The downward range was greater and seemed quite full; the upward range was possibly somewhat limited. There were no oblique movements, or, if any, so slight as to be questionable. The pupils were equal and reacted well to light and accommodation. The ciliary function was intact. There was no lateral movement of the mandible. The tongue was atrophied and corrugated; somewhat more so on the left and its movements were limited. There was limited movement also of the soft palate and uvula. The left mamma was entirely absent, the merest semblance of a nipple persisting. There seemed to be fair strength in the pectoral muscles of this side, but the flat, attenuated appearance of the breast suggested absence of some of the muscle substance. The right breast was well developed for a girl of her age, and, by contrast with the other side, had the appearance of being overdeveloped. The index and little fingers of the left hand were so short as to be quite out of proportion to the other digits. There was a very rudimentary nail at the top of the stubby index. The whole hand was considerably smaller than the right. There was no atrophy and she used it very well but not so freely as the right. The left arm was somewhat smaller than the right both in length and general circumference. There were no sensory defects anywhere, and no atrophic phenomena, except those mentioned in the face and tongue. Her intelligence was up to the average of her age, but her speech was, of course, very defective. The author suggests that the deficiencies present were of the type due to germinal defect as distinct from the teratological types caused by mechanical processes in utero, as, for example, club-foot, cyclopia and spina bifida.

C. A. Lang.

GREENFIELD, D. G.: CHANGE OF COLOR IN THE DIAGNOSIS OF INTUSSUSCEPTION. (Guy's Hospital Gazette, p. 254.)

The writer has noticed an early symptom of intussusception which he regards as extremely suggestive, that of a sudden change to an ashy grey color in a rosy healthy baby. He reports 3 cases in which this was a striking feature. He claims this change of color might occur with any acute abdominal condition in babies, but if it happened in another case, when there was a suspicion of an intussusception, the writer would have no hesitation in giving an anesthetic for examination. Another point he mentions is the temperature. When a child has passed blood and mucus from any other cause, there is likely to be some alteration in temperature. At the beginning of acute colitis it will probably be raised. Certainly, in the first few hours, a raised temperature would be much against intussusception. In the later stages, collapse would cause a subnormal temperature, as would happen in the exhaustion stage of intussusception, but then the favorable moment for the surgeon has passed.

C. A. LANG.

PROFESSOR HUTINEL: CHOREA AND HEREDITARY SYPHILIS. (Medical Press, February 5, 1919.)

The author, by close observation of a number of cases of chorea, sums up his impressions as follows:

That chorea cannot be looked upon as an affection of specific origin, for its relationship with rheumatism is too frequent to be doubtful. Nevertheless, it is particularly frequent in the subjects of hereditary syphilis. Infection by the treponeme often exerts a deleterious effect on the nerve centers, rendering them more vulnerable and more apt to react under the influence of ordinary or specific infections. This is a general tendency, and is not peculiar to chorea. As a matter of fact, we meet with meningeal and encephalic reactions pronounced enough to simulate tuberculous meningitis in children suffering from hereditary syphilis. It would seem that choreic encephalitis grafts itself more readily on a soil prepared by the treponeme.

Syphilis not only predisposes to chorea; it also modifies its course and its duration. The lesions of the meninges and of the encephalic vessels met with in the newly born at the septicemic stage of the disease leave more or less tangible traces. We are therefore tempted to believe that reactions of infective origin, occurring in the nervous system of such subjects, are likely to be more severe and grave. In cases that tend to be protracted may we not invoke the tendency to sclerosis of specific lesions? It is, therefore, prudent to think of syphilis in all cases of chorea which are unusually severe or unduly protracted, but it would be puerile to incriminate it in every instance, since there are many other possible factors. On the other hand, when we meet with abnormal changes in the reflexes, paralyses, trophic disturbances, neuritis of a nature to make us suspect structural damage of the nerve centers or tracts, it is only natural to entertain the idea of specific origin. The action of arsenical preparations, and, in some cases, of mercurial preparations, confirm this point of view concerning the relationship of chorea to syphilis.

C. A. Lang.

Lindberg: Meningeal Hemorrhage, Coli Infection and Hydrocephalus in a New-Born Infant. (Hygiea, p. 184.)

Lindberg's case was an infant, which was quite well for the first 3 days. Labor was normal. Weight at birth 4,100 grams. On the fourth day it became very restless, screamed incessantly and refused the breast. General convulsions, with twitchings of arms and legs, were accompanied by cyanosis. During these attacks there was divergent nystagmus. The abdomen was somewhat retracted and the patellar reflexes were much increased. There was no rigidity of the neck. The sagittal, lambdoidal and coronal sutures were widely open, and the fontanelles bulging and tense. Lumbar puncture showed a fluid under greatly increased pressure and having the appearance of pea soup. The fluid gave a positive guaiacol reaction and contained polymorphonuclear leucocytes and a few badly staining rods. After puncture the fontanelles were depressed and pulsating, and there was no recurrence of the convulsions. Cultures from the cerebrospinal fluid yielded short, gram-negative, slightly mobile bacilli forming yellowish white colonies which assumed a deep yellow color after 48 hours. These rods were not hemolytic. They showed the characteristics of bacillus coli. The following day, as the tension at the anterior frotanelle had again increased, it was punctured, and fluid, much less turbid than that obtained by lumbar puncture, was withdrawn. Irrigation was effected with saline solution, introduced through the anterior fontanelle and withdrawn by lumbar puncture. The solution was colored light yellow in its passage from the fontanelle to the lumbar region. Next day there was great general improvement, and the temperature was afebrile. Irrigation of the dural sac was repeated, but this time communication between fontanelle and lumbar region was imperfect. Culture of the cerebrospinal fluid now yielded only one colony. Thirteen days later the temperature was still normal, and the general condition was satisfactory. Lumbar puncture now showed normal pressure and the fluid was sterile. The circumference of the head, however, was gradually increasing, the eyes were displaced downward, showing much of the sclera, and was accompanied by nystagmus, slight twitching of the arms, and greatly increased patellar reflexes. Lumbar puncture 2 weeks later revealed a fluid under greatly increased pressure, but the cultures were sterile. In spite of repeated lumbar puncture the hydrocephalus progressed rapidly. Ventricular puncture was now performed, but though a considerable quantity of fluid was withdrawn, the circumference of the head was not reduced. The diffuse, purulent meningitis was probably secondary to the meningeal hemorrhage; for meningitis causes hemorrhage into the cerebrospinal fluid only when the infective agent is hemolytic. The colon bacillus isolated in this case was not hemolytic.

All the 25 cases of meningitis within the first 2 months of life collected by Borrivant in 1908 terminated fatally. Bacillus coli is the organism most commonly found in the purulent meningitis of children. Hitherto only one case of recovery has been noted. The patient (Holt's), 4 weeks old, developed meningitis in conjunction with bacillus coli pyelocystitis. But, as in the above case, hydrocephalus supervened. The sequel is probably due to the permeability of the linings of the brain being altered by the meningitis. It may also be due to mechanical obstruction to the communications between the brain and cord.

C. A. Lang.

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ORIGINAL COMMUNICATIONS

IS THE PRESENT FREQUENCY OF ACUTE OTITIS MEDIA AND OF SUBSEQUENT MASTOID OPERATION IN SOME MEASURE A REPROACH TO PEDIATRICS?*

By Thomas S. Southworth, M.D.

New York

The importance of the question raised in the title of this paper must be the excuse for its presentation. Whether it is timely or not will be shown by the discussion which it provokes. The prevalence of acute middle ear trouble, often eventuating in mastoid operation, would, when we consider the growth of preventive measures in other directions, appear to be a reflection upon therapeutics and medical research in general, and, since these affections are so common in early childhood, upon pediatrics in particular.

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*Read before the Thirtieth Annual Meeting of the American Pediatric Society held at Lenox, Mass., May 27, 28 and 29, 1918. For discussion see Archives of Pediatrics, June, 1918, page 369-372.

So far as the author knows, no progress has been made during the last decade or, one might safely say, for a much longer period, toward definitely aborting acute otitis media. We may probably grant that prompt paracentesis of the drum has largely decreased the number of persons suffering from chronic disturbances of the middle ear, since we believe that it relieves congestion and pressure and often prevents the development of a suppurative process. We may further admit that the mastoid operation has saved many lives that would otherwise have been sacrificed, but if we may judge from their common occurrence very little has been accomplished by way of prophylaxis for these two conditions.

It is true that middle ear inflammation is more promptly recognized than formerly and while this may account for the apparently increased number of such cases, early paracentesis does not appear to have reduced markedly the number of cases of threatening mastoid involvement. Prophylaxis, therefore, in order to have a maximum effectiveness, should be chiefly directed against the occurrence of the otitis media. Removal of adenoids and tonsils is along this line, and should be credited with playing a part in the cure of subacute and chronic ear conditions, but, alas, as we all know, it does not always prevent the recurrence of otitis.

Paracentesis and mastoid operation appear to be placed in the same category as immediate operation for appendicitis,—the view in each instance being that the earlier the operation the less the danger of serious later developments. There is, however, this difference that removal of the appendix or mastoid cells eliminates future danger from that particular source, while paracentesis is only a temporary protective measure with no absolute guarantee for the future, and possibly occasionally furnishing an avenue for the entrance of further trouble.

In an inquiry of this sort into the factors of a situation which all will probably admit is far from satisfactory, we should not hesitate to give consideration to personal impressions derived from clinical experience, even though these be not fully proven, since they may contain the germs of a forward movement. It is admittedly a not very uncommon experience to detect a serous effusion into the middle ear in its early stages, to subject the patient to immediate paracentesis at the hands of an expert and scrupulously aseptic operator, to have a drop in temperature with a serous discharge for a day or two, only to have this followed by a sudden profuse purulent discharge, a rise of temperature, the classical indications of mastoid involvement, and operation.

One naturally asks one's self whence came the severer infection, and would this have taken place behind an intact drum membrane? Did the douching carry in contamination, or was it an inevitable lighting up of the original process? Would that particular case have done better or worse under expectant treatment, or, granting recovery without paracentesis, have resulted in retraction and adhesions which would have ultimately been worse for the patient than being subjected to the mastoid operation? Furthermore, is it utterly impossible for modern medical research to devise some method of preventing a serous otitis from becoming purulent, even with the aid of such access to the middle ear as may be afforded by the incision in the drum?

The question may perhaps be properly asked, whether the re-opening of these questions will do more harm by seemingly confirming the half-baked opponents of proper and necessary operative measures, or whether this will be outweighed by stimulating thought in a somewhat neglected field. I have elected to believe the latter. Otitis is not only a common incident in our winter practice but has come to be almost an annual infliction in some families. I make haste to say that this statement is based quite as much upon a knowledge of families who are under the care of other careful and conscientious practitioners as under my own. Otitis is frequently painful in its early stages. Its relief involves the risks of anesthesia, however slight these may be in competent hands. It is always a source of anxiety because of the frequency with which even in seemingly favorable cases the indications for mastoidectomy supervene. Yet for many years we have been content to accept otitis as an act of providence and considered its outcome to be on the knees of the gods. Is there nothing that we can do about it?

We have here a territory partly occupied by the otologist and partly by the pediatrician. Possibly because of this divided responsibility the field has not been covered as thoroughly as it would have been had it lain only at one door. Does not the pediatrician stand somewhat in the same relation to the otologist and aural surgeon in which he formerly stood with relation to the obstetrician until the right of the infant was recognized to be of primary not secondary importance. The majority of these cases of otitis develop in pediatric hands. Ours is the opportunity to foresee and prevent them. Has the time not come when it behooves us to make some greater effort to devise measures for the prevention of these distressing aural cases?

At this point it may be well to refer frankly to certain independent views which appear to be prevalent among pediatricians in the infant wards of hospitals and institutions where otitis is common yet operations for mastoid involvement are infrequent. The middle ear of the infant is very vulnerable to acute infections, so much so that otitis is at times almost epidemic when many infants are gathered together and subject to the same infections of the upper respiratory tract. Nevertheless, the question constantly arises why so much larger a proportion of these hospital and institutional infants escape mastoid operation after a paracentesis, when the expectant plan of treatment is followed, than in private practice? In a long experience among institutions for infants, the number of cases subjected to early paracentesis and receiving adequate after care, which have developed unmistakable mastoid symptoms, has been very small indeed.

As an example, during the past winter I have had 25 cases of acute otitis in a service averaging about 80 infants under 15 months of age. These have been under the close supervision of the visiting otologist who has found in some 5 of them indications of mastoid involvement, yet all have escaped mastoid operation, and the discharge has ceased under treatment in all the infants save one, which at the time of writing is nearly well. This would indicate that the urgency of mastoid operation in the presence of the usually accepted syndrome of symptoms is not always as great as it has been considered in some quarters.

There is a growing tendency on the part of pediatricians to question the too inelastic application of the classical indications for mastoid operation, as today accepted by aural surgeons. The pediatric trend appears to be to hold off immediate operation until clearly inevitable. If this course is a wise and reasonably safe one, which I neither affirm nor deny, it follows that pediatricians should play their part in formulating or revising these indications for the benefit of others. Yet it must be said that in a number of instances which have come to my knowledge, such non-acceptance of the classical standards at the hands of others has served only to delay the evil day and further endanger the patient while confirming the original view of the surgeon.

My chief desire, however, is to arouse interest in the search for prophylactic and abortive measures, of which we stand in great need. Acute otitis media, although one of the commonest of afflictions arising in pediatric practice has not, so far as the author knows, been made the subject of any investigation from a pediatric standpoint—our knowledge and procedure being dictated by otology.

Formerly ear-ache was treated by the instillation of various ear drops into the auditory canal. These have been largely swept into the discard by the aural surgeon, as inefficient or obscuring his field of vision. Aside from the more antiquated use of laudanum and hot oil, so strenuously objected to by the otologists, there have been more recent combinations of cocaine, adrenalin, carbolic acid, alcohol, glycerine, etc., designed not only to relieve pain but to reduce engorgement and act antiseptically by absorption or osmosis. Should we not again ask ourselves whether they had absolutely no efficacy; whether they could not be made to have abortive power in a certain percentage of early cases, which might thus be spared paracentesis with its very real discomforts, if not real danger of transforming a simple effusion into a purulent one by contamination from the external auditory canal.

Nasal douching and, to a considerable extent, nasal spraying, have been abandoned owing to the outcry of the aurists that owing to the size, position, and patency of the Eustachian tubes in early life the danger from such procedures far outweigh their advantages. Some otologists, be it said, still employ and recommend the use of the cleansing, medicated spray in acute nasopharyngitis, coupled with precautions as to the manner and force of blowing the nose. Dr. W. L. Culbert of New York directs that the nose in such conditions should never be blown lying on the back, as in bed, but with the head dropped well forward. Only one side of the nose should be blown at a time, and gently, not forcibly.

The warning against blowing the nose in the recumbent or supine position is one of such eminent and evident wisdom that I have now extended it to routine directions in all cases of acute infectious diseases in which there is danger of middle ear involvement through the Eustachian tube. It is logical to accept the fact that, when lying on the back, secretions tend by gravity to collect about the orifices of the Eustachian tubes, and that the risk of accident is decreased by hanging the head well forward. In this latter position, gravity contributes to the expulsion of secretion and less forcible blowing is required.

Having been taught to fear the spray for cases in early life, I have long substituted dropping into the nose oil,—albolene, plus such antiseptics as eucalyptol,—as being less liable to penetrate the tubes or, in the event of so doing, carrying with them bactericidal properties. While distinctly helpful in combating coryza and naso-pharyngeal infections, this procedure does not always prevent the development of an otitis. The principle, however, of the instillation of oily solutions of antiseptics,—possibly with an oil of greater specific gravity than albolene,—would appear to be capable of further development for purposes of prophylaxis.

For purposes of discussion, I would conclude by asking these questions:

1. Are there any therapeutic measures which tend definitely to prevent middle ear infections in acute naso-pharyngeal conditions?

2. Are there any abortive measures which are reasonably efficient in beginning otitis media.

3. Could not some such measures be devised by well-directed research?

4. Are we correct in assuming that immediate early paracentesis is always indicated in all cases of effusion into the middle ear?

5. To what degree and under what circumstances, after paracentesis, is the pediatrician justified in counselling delay in the presence of the classical indications for mastoid operation?

6. Is the frequency of acute otitis and of mastoidectomy inevitable, or is it due to a complacent neglect of further research in this field?

Certainly the wide experience of the members of this Society should enable them to contribute something toward the solution of these problems.

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THE ATROPIN TEST (Journal A. M. A., May 18, 1918). Alfred Friedlander and C. P. McCord, Camp Sherman, Chillicothe, Ohio, have studied the atropin test for typhoid, the value of which has so far been recognized by the British Medical Research Committee that they have issued a monograph on the subject. Lacking typhoid cases at the hospital at Camp Sherman they have used the test in 228 cases of diverse diseases other than typhoid and paratyphoid, following the method of Marris. According to the advocates of this test, the normal individual or the patient suffering from diseases other than typhoid infections responds to the administration of atropin with a noteworthy increase in heart rate. In typhoid patients, however, this acceleration is less marked, which fact is attributed to an antagonism of action between atropin and typhoid toxins. Their article is illustrated by five charts and one table, and they do not find this supposed antagonism. Not only in other conditions than typhoid is this insensitiveness to atropin encountered; but also in typhoid infections marked cardiac acceleration may be observed, and they quote Matsuo and Murakami, in support of this statement. In the series cited by Matsuo and Murakami all the fatalities occurred among the number of typhoid patients giving positive atropin reactions, which is in accord with the established fact, that a tachycardia in typhoid indicates a bad prognosis. Friedlander and McCord sum up their results as follows: "A series of 170 nontyphoid patients has been tested with the atropin reaction in the manner described as reliable for establishing the presence or absence of typhoid or paratyphoid infections. Thirty-six per cent. of the number examined yielded results characteristic of typhoid. These cases giving reactions typical of typhoid without any evidence of typhoid existence were distributed over thirteen diseases. It is concluded from so high a percentage of discrepancies that the atropin reaction is without especial value in the detection of typhoid infection."—*Journal A. M. A.*

INTRAVENOUS INJECTIONS IN INFANCY

ADVANTAGES OF THE SUPERIOR LONGITUDINAL SINUS ROUTE

By Earl Mendum Tarr, M.D.

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During the past 3 years much has been written concerning intravenous injections in the treatment of diseases of infancy and early childhood. Dunn and Howell of Boston and Fischer of New York have contributed valuable data from extensive hospital and private practice. There are, however, several points which have not been sufficiently enlarged upon to stimulate the interest of the general practitioner.

First of all it must be remembered that any new procedure is looked upon with doubt by many. Is it really an improvement? Is it dangerous, and if dangerous, to what degree?

The entering of a vein in an adult is so simple—and direct or indirect transfusion so easy—that we practice it daily without regarding it as anything unusual. Intravenous injections are given as a matter of course. Entering the vein of an infant, however, is quite another matter and so many difficulties are apt to be met that this mode of treatment has never been practiced to any great extent.

In 1915, Helmholz,[1] of Chicago, called attention to the ease with which the superior longitudinal sinus could be entered. At that time Dunn and Howell, at the Infants' Hospital in Boston, were using the sinus route for obtaining blood for diagnostic purposes. Routine blood examinations were made on all infants admitted to the wards and in all instances the sinus was entered. A careful and painstaking study of the house records showed no bad results from the procedure. Many luetic infants were admitted to the isolation ward and after due deliberation it was decided to try specific treatment via the sinus. No unpleasant results were recorded. At the Children's Hospital, however, 1 or 2 infants treated in the out-door department suffered more or less shock and it was deemed unwise to continue the treatment in those cases seen in this department. This shock was due, no doubt, to faulty technique or to an overdose of salvarsan of questionable manufacture.

Anatomy: Familiarity with the anatomy of the sinus is absolutely necessary. The superior longitudinal sinus begins blindly anteriorly by a small vein-like portion which lies in the foramen caecum between the frontal and ethmoidal bones, but soon becomes a true sinus which passes upward and backward in the median line of the frontal bone, beneath the sagittal suture of the parietals and down the median line of the squamous portion of the occipital to terminate at the internal occipital protuberance by opening into the torcular herophili, or more usually, directly into the right lateral sinus. The most important point to be remembered is that the sinus grows gradually larger from before backward. In 100 necropsies on infants under 18 months of age the average size of the sinus at its termination was 11.6 mm. The next most important thing to remember is that the sinus landmarks are exceedingly constant and numerous examinations have shown that the sinus is largest at, or slightly behind, the posterior angle of the anterior fontanelle. Remembering the course of the sinus and the landmarks it is exceedingly difficult to miss it, try as you may.

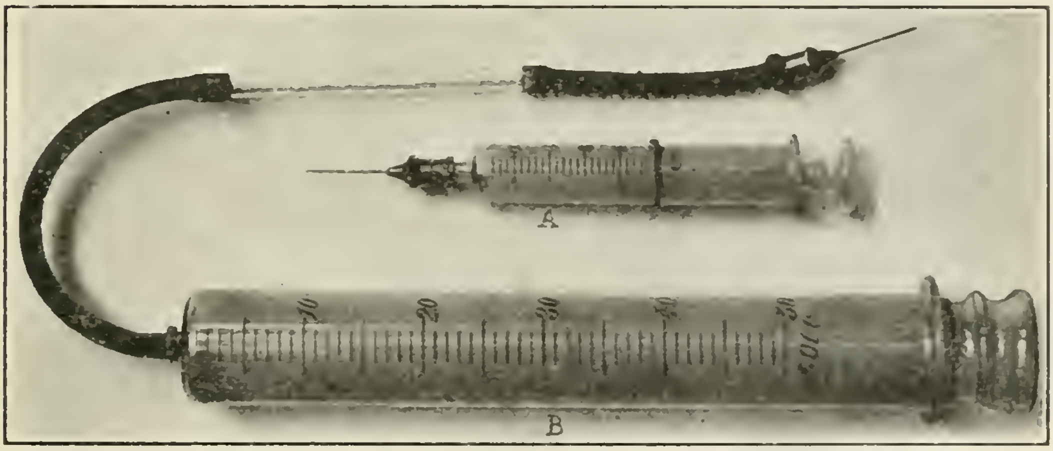

FIG. 1. A—Needle and syringe used in obtaining blood.
B—Syringe, connections and needle used for intravenous injections.

Technique for Obtaining Blood: Several writers have described their individual technique and the apparatus required. The apparatus described by Helmholz,[2] which attaches to the table and steadies the infant's head, is more or less expensive and bulky. By means of a guide fastened to the infant's head with adhesive plaster, the needle is introduced through the scalp at a more or less definite angle. Brown and Smith[3] use a special needle, a solder guard being placed about a quarter of an inch from the tip of the needle. This does not permit or allow for adjustment and consequently several needles are required. You guess a needle and if it proves to be too short you are obliged to withdraw and try a longer one. The most recent apparatus is that suggested by Goldbloom[4] and so far as an apparatus is concerned is probably the least objectionable. But after doing hundreds of venipunctures the writer is convinced that the less apparatus required the easier and safer the procedure and all that is actually required is an ordinary 5 c.c. Luer syringe and an ordinary 21 or even 23 gauge hypo needle an inch long. I have no objection to an 18 gauge needle but a needle of smaller bore causes a little less pain, leaves a smaller bleeding point and has always been found quite large enough.

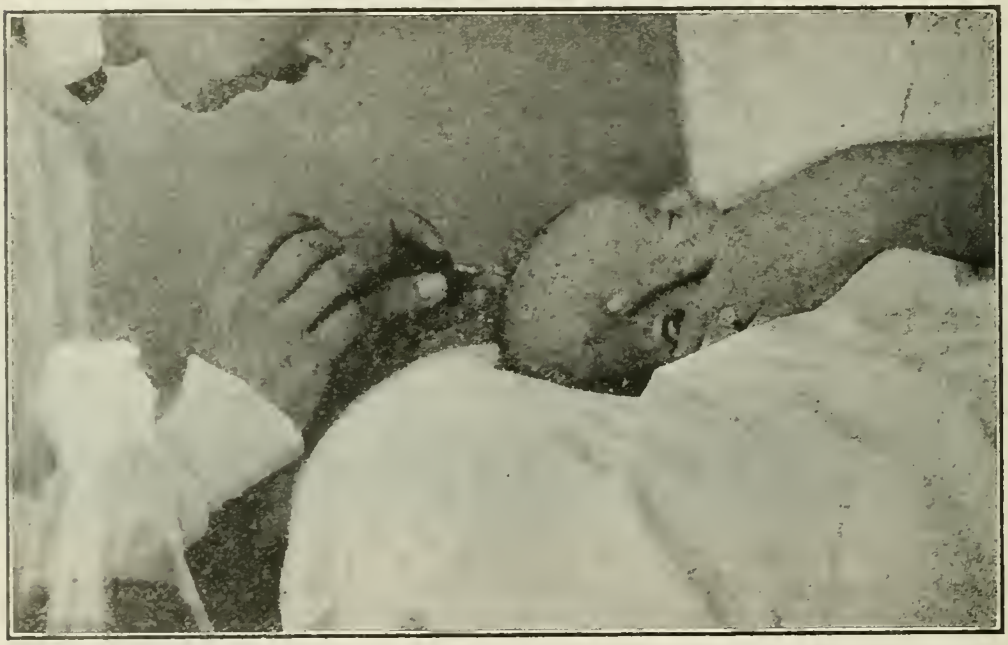

FIG. 2. Entering the sinus for blood. The needle has entered the sinus and blood is seen in the syringe.

Preparing the Field: Formerly it was our custom to use soap and water freely, followed by alcohol or ether. More or less irritation was experienced and lately very gentle scrubbing with alcohol or painting with a weak iodine solution has been the custom. When the baby has a dirty head (cradle cap) one is naturally inclined to use more care.

Author's Technique: The infant is first wrapped firmly in a sheet or small blanket. This controls very largely the arm and leg movements. He is then placed on his back on the table and the head held firmly between the two hands of an assistant. The operator is seated at the head of the table. The posterior angle of the anterior fontanelle is now located and the needle, which is attached to the ordinary syringe mentioned, is thrust downward and very slightly backward through the scalp until the sinus is entered. The resistance met by the needle is much the same as is encountered in doing lumbar puncture.

Measurements made by Tobler[5] show that the distance from the skin to the apex of the sinus varies from 6 to 12 mm. in infants of different ages. This is of interest but not essential to the operator, because one very soon learns to feel for the sinus without paying any attention to measurements on the needle. The beginner will frequently become annoyed by finding that traction on the plunger of the syringe does not bring forth a stream of blood. In the majority of cases it will be found that the sinus has been transfixed. Gradual withdrawal of the needle with simultaneous traction on the plunger will usually verify this and blood will be seen to enter the syringe. I can see no reason why harm should result from carrying the needle through the sinus to the subdural space; it is done by practically all of us who enter the sinus, at some time or other, so this accident is often necessary to remind us that measurements are not always reliable guides. I have on 4 occasions entered the sinus at a depth of 3 mm. and on numerous occasions advanced the needle to a depth of 7 and even 8 mm. before getting within the lumen of the sinus. This can readily be understood when one remembers how the thickness of the scalp varies in different infants. When enough blood has been drawn into the syringe, withdraw the needle. There is usually no bleeding and gentle pressure over the wound for a moment will control any slight oozing. When in doubt or when the infant must be left in the care of an inexperienced attendant, it is well to cover the puncture with collodion. Not infrequently, in spite of the negative pressure within the sinus, blood will appear in the syringe even before traction has been made on the plunger. In most cases the infant will have cried and by so doing has raised the pressure. Two observers have reported that they frequently enter the sinus without even rousing the infant from sleep. I have never been able to accomplish this on a live baby.

The advantage of the syringe and needle attached seems to me apparent. No expensive or bulky apparatus is necessary. When any needle or obturator is introduced into the sinus it must be steadied in some manner, usually with the hand. The next step, which consists of connecting the needle with a syringe, must be done carefully and even then the needle is apt to slip and annoy the operator. This is done away with when the needle is attached and made to become a part of the syringe. It has been suggested that in using a needle without an obturator the needle is apt to become blocked. I have never experienced this because I always use a new needle, of short bevel and very sharp.

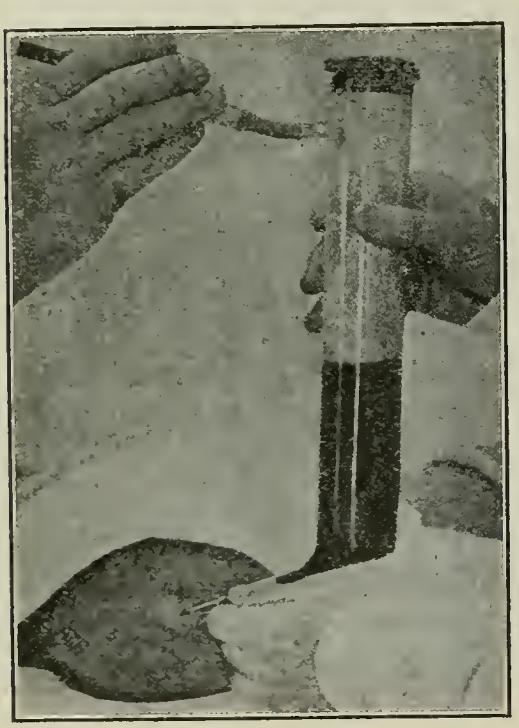

Fig. 3. Direct transfusion into superior longitudinal sinus. Vincent tube.

When blood for Widal, Wassermann, culture, coagulation time, etc. is desired the above method is most satisfactory.

Medication: Blood transfusion was the first form of intravenous treatment practiced at the Infants' Hospital in which the sinus was selected. Many infants were transfused by Vincent[6] with the aid of the Vincent tube.

The simplicity of the transfusion and the excellent results were always striking. Hemorrhagic diseases of the new born were frequently seen and transfusion performed, the sinus route being the one of choice. The mortality was unusually low. As we became more familiar with the technique other lines of treatment suggested themselves. During the summer months, many cases of marasmus, infectious diarrhea and other diarrheal conditions, the result of improper feeding, were studied. Many cases were moribund when admitted. They were not so much in need of blood but rather some fluid to take the place of that lost through excessive numbers of watery stools. At first a saline was introduced into the sinus and with good result. Later dextrose solution was used with even better result. It was soon learned that this particular type of washed-out, toxic, desperately ill baby could handle relatively large amounts of sugar. Usually the initial injection was from 2 to 5 ounces of a 6 per cent dextrose solution. The rapid improvement in color, pulse and temperature, while on the table, was marvelous and there is no question but that many infants were brought back after recovery seemed impossible.

For giving dextrose solution very little apparatus is required. A metal or glass syringe of 30 to 50 c.c. capacity, rubber tubing, glass window and an ordinary 20 or 21 gauge needle is necessary. This may be assembled and sterilized and carried conveniently. It is obvious that when anything is to be injected into the sinus it is first necessary to make sure that the sinus has actually been entered. After introducing the needle, if you are not certain of being within the sinus, make traction on the plunger until blood appears in the glass window. Proceed then to slowly and cautiously, without moving the needle, empty the syringe. The work will be made much easier if the assistant holds the head of the infant very firmly. Too rapid emptying of the syringe will be accompanied by some pain and the infant will become very restless. The amount of fluid which may be given with safety is a matter of dispute. It is my opinion that an overdose is rarely, if ever, given. The infant will become so lively and the assistant will be so busy holding the patient that the operator will usually stop before any damage has been done to the sinus through the moving about of the child. It is perfectly safe to give 2 ounces and then rest a moment. If nothing alarming is noticed, make traction on the plunger again, to satisfy yourself that you are still within the sinus, and then again proceed with the injection. Often 5 or 6 ounces may be given without the infant resenting it. In one instance, I gave 190 c.c. to a 5 months old infant who took it well and responded promptly. In another instance 120 c.c. to an 11 months old baby produced alarming symptoms: the baby became pulseless and an acute dilatation of the heart was noted. The case was considered hopeless when sent to the operating room but in spite of the shock and the heart manifestations he recovered and left the hospital in good condition. This proves nothing but shows that each individual case must be studied and treated accordingly. It is simply a matter of feeling ones way cautiously and if this is done no harm can result.

In a previous report (preliminary)[7] the writer discussed, at length, the possibility of producing trauma to the sinus by repeated puncture. Since that time (1916), a comparatively large number of cases have been studied in the autopsy room. These studies further convince me that whatever harm may be done is only temporary and slight. Many cases seen in hospital practice were so hopeless that repeated injections were given largely for experimental purposes. At autopsy, several sinuses that had been entered as many as 25 times in the course of a week showed no macroscopic pathology. Section of the tissue, in some instances, showed minute puncture wounds but for the most part all findings were negative. We may, therefore, conclude that the end usually justifies the means.

Indications: Practically all of the hemorrhagic diseases of the new born are amenable to treatment. Blood serum, when introduced into the sinus of a bleeding infant, usually acts promptly; more so than when given in any other way. When blood transfusion is indicated there is no time to be lost and the sinus route is by far the easiest and most satisfactory. Regardless of the depleted condition of the infant the sinus can be entered with ease. Cutting down upon and elevating a vein requires time, an anesthetic, and carries with it the possibility of infection. Entering the sinus is a matter of 10 seconds, is easy and carries with it a minimum danger of infection.

Diphtheritic antitoxin, salvarsan, dextrose solution and alkalies may be given quickly and safely. Camphor in oil, when given into the sinus, acts almost instantly. In diphtheria, syphilis, acidosis and the toxic diarrheal diseases seen in the summer months the general practitioner should not hesitate to use the sinus route for intravenous medication.

Conclusions. 1. To obtain blood for diagnostic purposes from the superior longitudinal sinus of an infant is safe and practical.

2. An ordinary Luer syringe and hypo needle is all the apparatus required.

3. Transfusion of blood, via the sinus route, is safe and simple and can be done by the general practitioner in the average home.

4. Injections of medicinal solutions, as mentioned above, are safe and act promptly in many instances.
5. The sinus route need not be considered as a last resort.

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PYLORIC STENOSIS (Jour. A. M. A., Sept. 7, 1918). W. D. Haggard, Nashville, Tenn., describes the anatomy and symptoms of hypertrophic pyloric stenosis of infants and its treatment. The essential pathology is a congenital hypertrophy of the pylorus, especially its transverse muscular fibers, spasm being a secondary matter. The effort to force food through the narrowed orifice brings on an edema, which, as the food increases in amount, narrows down the lumen until it becomes more or less completely obstructed. At necropsy there is found at the pylorus a napkin-ring-like tumor projecting into the duodenum. Probably the hypertrophic pyloric stenoses occurring in young adults may be explained on the basis of a spontaneous cure during infancy with the congenital hypertrophy remaining. The symptoms are described in the order of their importance as: (1) Persistent, recurrent, explosive vomiting; (2) starvation stools and diminished urine, with emaciation; (3) visible gastric peristalsis; (4) palpable tumor; (5) bulging epigastrium, with stretched abdomen; (6) progressive loss of weight. The symptoms may appear within ten days after birth or be delayed until the second or rarely the third month. Only very mild cases should be treated medically and tentatively. All others should be treated by operation. If every patient were operated on with the present improved technic as soon as the case is diagnosed the mortality, Haggard thinks, might be reduced to approach 10 per cent. Infants bear local anesthesia well, have very little or no physical consciousness of pain and no fear, and the local anesthesia blocks off all traumatic stimuli to the brain, to say nothing of the absence of the shock and dangers of an inhalation anesthesia.—*Journal A. M. A.*

THE EXCRETION OF THE VITAMINES

By A. M. Muckenfuss, Ph.D.

Professor of Chemistry, School of Medicine, Emory University, Atlanta, Ga.

Modern science has amplified the common-sense facts of nutrition in many details. Thus, it was long ago evident to the chemists that protein nitrogen and mineral salts were essential constituents of the diet. The bacteriologists have taught that material ingested should be free from pathogenic germs and their toxic products. The agricultural chemists have properly emphasized the necessity for a certain amount of fiber in food, giving bulk to feces. Much other information has been gathered.

The really fundamental discoveries, however, of nutrition in recent years were that protein must contain certain amino-acids, such as tryptophane, tyrosine and cystine, and that there exist two food accessories, or vitamines. As is now well known, one of these is water-soluble, found largely in the germ of seeds, and the other is fat-soluble, found in many animal fats. Both exist in plant leaves. It may be added that, just as the kind of protein is important, so there are many indications that the kind of carbohydrate is also fundamental, i.e., a certain amount of lactose is required, especially for the young[1]. There are some indications that fats play an essential rôle in metabolism. Exclusive of butter, fruits and vegetables, which are quite variable in quantity and cost, the food obtainable from groceries before the revelations of the world war was generally inadequate for proper nutrition, on account of unsuitable methods of milling or canning, as shown by the work of Voegtlin and Myers[2] and others. As a result of the stimulus due to the discovery of the vitamines, beri-beri and scurvy have been conquered, if not understood, and to these McCollum and Simmonds add xerophthalmia.[3]

In 1914, Cooper[4] made the interesting observation that animal feces contained the antineuritic or water-soluble vitamine, but attributed its presence to undigested food particles, since it was found that B. Coli was not antineuritic. The writer has recently noted facts[5] indicating that the former inference may be considered a half-truth. The vitamines in blood and milk are comparatively simple as organic compounds, and are dialyzable. They ought therefore to be found in such excretions as ox bile and human urine and were so found by him.

The method used in the research referred to was Eijkman's original one of curing polyneuritic fowl (or pigeons) by treatment per os. The material ingested was "activated earth" made by the method of Seidell[6] by shaking the secretion with fuller's earth. The amount of bile used varied from 950 to 1750 c.c. and of urine from 4150 to 6000 c.c. per dose. Of 9 polyneuritic pigeons treated with bile at different seasons by the above routine, 8 showed improvement and 5 great improvement. Of 4 polyneuritic birds given activated earth from urine, all showed great improvement.

Probably, therefore, the vitamines are excreted in small amounts in human urine normally, and reasoning by analogy, one infers that they are present in appreciable quantity in human bile. A fraction of the portion in the bile is perhaps utilized in the intestinal tract or reabsorbed. In the light, however, of Cooper's work, previously mentioned, and of the existence of the antineuritic vitamine in urine, it is a fair conclusion that a part of these substances is eliminated unimpaired in the feces and lost to the organism.

The above facts are given in order to encourage further investigation. We have perhaps in addition to a vitamine intake in the food a not negligable vitamine output in the feces and urine. A comparison of these would prove profitable. During lactation and under certain pathological conditions, the rate of vitamine excretion might vary appreciably. Some cases of functional disturbance among children may be due to this cause.

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A CASE OF INFLUENZAL MENINGITIS

By Charles Kimball Johnson, M.D.

Burlington, Vermont

Male, age 3 years, previous history negative. Present illness began on October 22, 1918, when he became ill with influenza, the whole family being ill at this time. Pneumonia is said to have developed on the third or fourth day, both sides being affected. The temperature continued irregularly, varying from 100° F. to 106° F. with frequent fluctuations, up to the time he was admitted to my service at the Mary Fletcher Hospital, November 7. Part of this fluctuation might be accounted for by the development of double purulent otitis media during this time.

On admission to the hospital his condition was as follows: Temperature 100.6° F.; some moist rales over lungs posteriorly; heart negative; some pus discharging from both ears; the pupils somewhat dilated and slightly unequal. There was some rigidity of the neck and on moving the neck the child became very irritable; knee jerks slightly increased; kernig sign absent. There was some stupor. Lumbar puncture gave a cloudy fluid under pressure, 35 c.c. being withdrawn. The predominance of polymorphonuclear leukocytes and the presence of the influenza bacilus made the diagnosis of influenzal meningitis.

On the 10th another puncture was made and 30 c.c. of cloudy fluid was withdrawn and this was replaced with 15 c.c. of convalescent serum intraspinally with an equal amount subcutaneously.

At this time the temperature was 103° F., but dropped to 99° F. within a few hours to rise again to 104° F. the following evening. At this time 30 c.c. of a somewhat clearer fluid was withdrawn, 20 c.c. serum being injected intraspinally and 15 c.c. subcutaneously. The temperature dropped to 97° F. within 12 hours, never rising again above 99° F. On November 13 condition much improved, but another puncture was done giving 30 c.c. of quite clear fluid, and 15 c.c. serum were used by both methods.

The child's condition gradually became normal and has continued so to the present time, January 27, 1919.

MASKING AN ENTIRE SCHOOL TO PREVENT THE SPREAD OF INFLUENZA

By Nathaniel Barnett, M.D.

Woodmere, N. Y.

With the increased prevalence of influenza during February, especially among the younger children, an attempt was made at the Woodmere School to prevent the spread of the disease by requiring all of the pupils to wear masks.

The school has an attendance of 120. Average in each class 15. Ages 4½ to 14 years.

The direct cause of this procedure was the fact that 90 per cent of the two lowest grades were sick; while the rest of the school had an average attendance for that time of the year, only about 10 being absent.

In order to put the rule into effect, the following letter was sent to the parents:

"The attendance at our school has been unusually good this season considering the wide extent of the epidemic. During the coming month, under normal conditions, grippe and colds are very prevalent. In order to maintain our good record of attendance and keep down as far as possible any spread of grippe or ordinary colds, it is requested that each child be supplied with a gauze mask to be worn during school hours. This will prevent the accidental spread of colds due to unavoidable sneezing and coughing. The mask is to be made of 6 thicknesses of gauze 4 by 6 inches, sewed together and with tapes about 10 inches long attached to each corner.

The child's initials should be sewed on the mask.

May we ask your coöperation and request that your child bring his mask on Wednesday morning?

School Medical Inspector."

The response was very enthusiastic, every child appearing with his mask on the designated day, and taking the matter very seriously.

The following results ensued promptly:

1. After the second hour the children became restless.
2. The quality of their work diminished.

3. The masks became wet and soiled and would not stay in place.
4. Children who wore glasses could not keep the mask over the nose because the lenses became clouded.
5. The number of reprimands for bad behavior increased.
6. Each day the children started their work well, but irritability and restlessness developed after an hour and became worse as the week progressed.

At the end of one week, a talk with the principal showed that the work being done was only a small fraction of the normal; the children were listless and did not concentrate well, and the general conduct was not as good as the previous week. During this entire week the attendance was exactly the same and a few cases of influenza developed. Under these circumstances it was decided to discontinue the use of masks and so another letter was sent to the parents to that effect. Our rule now is to keep masks on hand, and any child found coughing or sneezing, is requested to put one on, or leave school at once.

Conclusions.

The impractical features connected with the wearing of masks and the fact that they did not reduce the number of new cases of influenza, make their use of very doubtful value.

Acute Leukemia (Archives des Maladies du Cœur, July, 1918). C. Achard and A. Leblanc report two cases in men of 46 and 63, fatal in about 6 weeks in one and in 5½ months in the other. In the first case the symptoms were those of a severe acute hemorrhagic infection with stormy onset and high fever; the other case progressed slowly and inexorably to the terminal cachexia without any acute incidents, but the blood picture was about the same in both. They give the tabulated details of similar cases from the literature and discuss some of the problems presented, the relations between the different elements of the blood, the nature of the reactions in the blood-producing organs, etc. In Giroux and Verdier's case the patient was a man of 25 who had been at the front for 3 years. The disease ran a rapidly fatal course in two weeks.—*Jour. A. M. A.*

MISCELLANY

FIRST AID TO THE INFANT*

The subject allotted for this lecture is necessarily somewhat limited in scope, since infancy is that period of life from birth to the end of the first year. It has been universal experience that whenever economic conditions are seriously disturbed through war or other calamities, infants and young children who are the most sensitive and least resistant elements of the population are the first to pay the toll of changed environmental conditions in the form of malnutrition, disturbances of digestion, respiratory and contagious diseases and all that follows in their wake.

The high cost of living with its diminished food supply, clothing, shelter, medical and nursing care, reflects itself first, foremost and most seriously upon the infant and young child population. The adult member of the family or the school child can wait a reasonable length of time until the necessities of life are provided and can resist the inroads of deprivation, hunger, lack of food or other dangers. The delicate or feeble infant or child, however, cannot wait. Delay with him is always dangerous. He must have food, especially milk, as well as warmth and shelter and have them quickly. Otherwise it means malnutrition or starvation, and these mean a lowered vitality, restricted growth and development, if not disease and death. The younger the child, the greater the likelihood of disturbances of health under war conditions; and yet, despite all this, it is true as Professor John Fiske of Harvard has said, "Out of the very helplessness of the infant comes the helpfulness of man." At no time in the world's history has this statement assumed greater force; at no time has this lesson been brought home with such intensiveness; at no time has it been more necessary or urgent to safeguard the health and lives of these helpless infants, the future mothers and fathers of our country.

You will readily understand that in normal peace times and in a community with a large birth rate—approximately 140,000 annually in New York City—the death of several thousand infants will not make any pronounced impression upon the status of the population. I do not mean that the health and lives of infants should not be carefully safeguarded at all times and in all ways, but it is apparent that the larger the birth rate the less serious will the numerical status of the population be disturbed by a relatively high infant mortality rate. In war times, however, with a diminished birth rate which almost invariably follows, it is clear that every baby counts and that the need for extra precautions and additional infant control becomes of first importance.

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*By Jacob Sobel, M.D., Chief, Division of Baby Welfare, Bureau of Child Hygiene. From the Monthly Bulletin of the Department of Health, City of New York, February, 1919.

Since approximately one-fifth of all deaths at all ages occur in infancy, it is apparent that a very great economy of life proportionate to the loss from war is possible in infancy. If "it is babyhood that has made manhood what it is," then the future of the nation depends upon the care of its babies. It is as true today as ever it was that the nation that has the best babies has the future, for after all, the conservation of infant and child life has many aspects of importance—economic, industrial, commercial, social as well as military—and with better babies, there must necessarily come better children, better parents, better citizens, better city, better state and better nation.

The military significance of proper infant and child care has been brought home to all the warring countries in no uncertain terms in the form of the large number of rejects of military age. Proper care of infants and children would have avoided many of the physical and functional mental defects found in these young men and have placed at the disposal of the government not only a larger and better number of men for military duty, but for the many avenues at home which form so vital a part of war machinery; and if 40% of our young men of 21 to 31 years of age—the period of greatest physical vigor—were found unfit for military service, how large a proportion of our young women are unfit for the exacting duties of motherhood. The indifference and, in some quarters, the neglect of infancy and early childhood was a national mistake and it is because of our desire to avoid a similar contingency in the future and to profit by the pitfalls of the European countries in failing during the early years of the war to recognize and realize the importance of child conservation, that national attention has been given to infant and child care and that first aid to the infant is a subject which we concede assumes a place second only to the men engaged in warfare and the necessary machinery that goes with it.

The purely military significance of child conservation in numerical terms is seen in the case of Great Britain, where it has been estimated that if that nation had devoted the same attention to child welfare during the past 40 years that she is giving the subject today, she would have had almost 2,000,000 more men in the field; and what applies to England applies with even greater force to the other warring countries where organized efforts for the control of infant and child welfare were less developed than in the United Kingdom.

Infant mortality from the other standpoints, commercial, industrial, socio-economic, etc., are intimately interwoven with the infant birth and death rate. War as aforestated, has almost invariably resulted in a diminished birth rate and an increased infant mortality rate. Figures are at hand to show that the past war has meant a loss to the European countries engaged, of many millions of potential lives.

I have taken up some time to plead the case of the infant in war times in order to show that of all those left at home, he stands in need of the greatest protection. As to the subject proper of the lecture, I daresay that at first thought, many of you fail, as I did, to see any direct connection between first aid and a baby. First aid for the infant seems to be a subject upon which little can be said and yet I hope to be able to show you that emergency first aid treatment or care of the infant is not only an urgent and important part of home defense, but that upon its proper and timely application, the future well-being of society depends.

If we look about us in nature, we will find that it was evidently intended that the baby should receive the aid, assistance and care of others during its early life. The lower animals soon after birth become separated from the mother and must find food and shelter and guard themselves against attack and injury of all kinds. The more highly developed species depends for its food, its shelter, its clothing, its comfort and care, for its very existence, upon the aid of its parents, especially the mother, and in proportion as this aid is good, bad or indifferent will the future man or woman become a credit or a liability to society. As Sir Arthur Newsholme has said, "The mother is the main element in the environment of the infant."

The term "first aid" is generally applied to emergency assistance in case of accident, injury or disease. I prefer to apply it in a broader and more comprehensive sense, to any form of assistance, which will alleviate or better, prevent suffering, privation, disease, injury or death. In fact, we hear too much of "first aid to the injured." Why wait until injured? "First aid to the uninjured," or in other words, prevention is the more logical method of approach, it seems to me. I emphasize here the term prevention, because in infancy, especially, the highest type of first aid is that aid which renders first aid in its limited and general sense unnecessary. First aid to the infant should aim primarily at prevention of conditions which make for poor nutrition, lack of growth, deformity, disease and death.

The inhibitory powers of the infant are relatively small and in many instances, conditions or diseases affecting them are so fulminant in character that any first aid, no matter how well directed, will fail to save life. There are instances of summer complaint, luckily uncommon in these days, so violent in onset and so acute in their symptoms, that despite all treatment and aid, death ensues within 24 hours. These cases and similar ones can be saved better by preventive measures than corrective or curative ones—true first aid for the infant.

You will have gathered from these remarks that in infancy, the sooner aid is given the better, if we hope to avoid much of the physical and mental deterioration of later life. For many years, we have satisfied ourselves with the care of the baby shortly after birth, failing to realize the important fact that the best and proper time to take care of the infant is before he is born. As Jacobi said, "The baby's life and pathology begin nine months before its birth."

There is something so interesting, so human, so tangible, so dramatic about the newborn baby, that we fail to realize that the condition of the baby at birth depends largely upon the care of the mother before its birth. The pendulum is beginning to swing from babyhood to motherhood and today we find that the first aid to the infant, the first prevention against injury, accident and disease at birth begins from the time the mother becomes pregnant. A discussion of first aid to the infant divides itself, therefore, arbitrarily into two parts, first, the prenatal period—before birth; second, infancy—from birth until the end of the first year.

Prenatal Period: There is probably no more pressing, urgent, immediate or direct need along lines of child conservation than the instruction and supervision of expectant mothers, popularly termed prenatal care. We may spend money, energy and time on the baby after birth; we may surround him with all the aid and care and comfort that is possible; we may place him in the most favorable surroundings, and yet, despite all, we will fail to make any marked and appreciable impression upon the infant mortality rate of this city, and we will fail to increase the birth rate to the extent necessary in war times unless we direct our efforts to prenatal supervision. In other words, first aid or prevention as applied to the baby after birth, while a most valuable factor in the reduction of infant mortality and morbidity, and while advisable as to high a degree as possible, does not and will not strike "the root of evil," the evil which causes the largest percentage of infant deaths, namely, the congenital diseases, those diseases, in other words, which are not due to any errors of infant diet or hygiene, but depend upon conditions in the mother or the child which are operative before, during or shortly after the birth of the child.

The first aid, the very first aid which should be given to the child, should be given, as it were, to the mother, if we hope to prevent the large and unnecessary number of infants sacrificed each year because of congenital diseases—congenital debility, prematurity, marasmus, accidents at birth, malforamtions, etc. The care of the expectant mother is so important and vital a factor in first aid for the infant, and so essential in the control of infant mortality, particularly during war times, that I venture to present for your consideration, certain statistics which will indicate the serious loss of life due to the neglect of a proper supervision during pregnancy, and all the more serious because a large percentage of deaths due to this neglect are preventable. Here is the indictment:

1. Forty per cent of all deaths under one year of age are due to congenital diseases.

2. Approximately thirty-seven per cent of all deaths under one year of age occur during the first month of life and two-thirds of this number occur during the first ten days of life.

3. Seventy-five to eighty per cent of all deaths during the first month of life and approximately ninety per cent of all deaths during the first ten days of life are due to congenital diseases. In

recent years, while the death rate from the other infant-killing diseases, diarrheal and respiratory, has been markedly reduced, the death rate from congenital diseases has remained practically stationary. In point of fact, the total number of infant deaths from congenital diseases during 1917 was almost equal to the number of deaths from diarrheal and respiratory diseases combined, namely, 5,166 and 5,438, respectively.

4. While the death rate during the first month of life has remained practically unchanged for many years, the infant death rate from the second to the twelfth month of life and the infant mortality rate under one year of age have progressively declined during recent years.

5. Congenital diseases occupy the first position in the list of baby-killing diseases, having taken the place of the diarrheal diseases which years ago were so prevalent as to practically control the curve of infant mortality. We find, for example, that in 1907 the infant mortality rate from diarrheal diseases was 44.4 per thousand children born and in 1917, 19.1; from respiratory diseases, 30.5 in 1907 and 19.36 in 1917, and from congenital diseases, 46.3 in 1907 and 36.49 in 1917. It is apparent, therefore, that the reduction of infant mortality during recent years has been due very largely to the successful control of the diarrheal and respiratory diseases and that the control of congenital diseases has not kept pace with the reduction in total infant mortality.

6. While the number of maternal deaths incident to child bearing has declined, while the death rate from conditions associated with pregnancy other than puerperal sepsis has declined, and while the death rate from puerperal sepsis itself has declined, the number of maternal deaths incident to pregnancy and the number of injuries and accidents of child birth, which mean invalidism for the mothers and loss of breast milk for the baby, are entirely too large for an enlightened community.

These outstanding facts clearly indicate the serious handicap under which infants, whose mothers are not given the benefits of prenatal supervision, start life and point plainly to the great need for the care of babies before they are born. Not that all conditions or diseases classified under the heading, congenital diseases, are preventable, but with a well organized and correlated service which offers prenatal instruction to needy mothers, a very large percentage of deaths in infants would be prevented. Prenatal instruction would not only prevent a large number of congenital diseases and accidents at birth, and therefore give the community a larger number of strong and healthy infants, but it would increase the birth rate—so important in war times by diminishing the number of stillbirths.

In New York City, over 6,000 stillbirths are reported annually. This represents but a small proportion of the actual number of babies that are stillborn, if we use the term stillbirth in the sense of the Department of Health, which defines a stillbirth as the product of conception expelled from the uterus dead at any period of uterogestation. It has been estimated that one stillbirth occurs for every four living births, and with an approximate birth registration in New York City of 140,000 annually, 35,000 stillborn would be nearer the actual state of affairs. This refers to stillbirths which take place without criminal or intentional intervention, and due to causes which, if treated or corrected by supervision (causes such as syphilis, alcoholism, diseases of the uterus and adnexa, constitutional diseases and poisoning by lead, mercury, phosphorus, copper, etc.), would result in many instances, in the birth of a living child.

I make no apology for having dwelt so long or so forcefully upon the urgent need of supervision of expectant mothers, because it is the very crux of the future control of maternal and infant morbidity and mortality and indeed of any pronounced increase in the population. Organized attempts for saving infant life have come about either because of a declining birth rate, as in France, or a very high infant death rate, as in Germany, in the former instance to preserve the limited number of babies born, and in the latter case to prevent the enormous waste and wreckage of infant life. Properly directed supervision of expectant mothers accomplishes both purposes in that it not only reduces the very high infant death rate, due to congenital diseases, but that it increases the number of living babies by reducing the large number of stillborn, to say nothing of securing a better, stronger, and healthier type of baby and mother.

To me the control of congenital diseases through prenatal and early postnatal care of mother and child is the very first aid which should be given in any baby-saving campaign. That many infant lives can thus be saved has long since passed the theoretical stage.

The results of an intensive prenatal program carried out by the Bureau of Child Hygiene of the Department of Health since 1914 have shown conclusively that coördinated and correlated efforts in the supervision of the expectant mother will eventually mean a lowered infant mortality rate, fewer deaths during the first month of life, especially from congenital diseases, fewer premature births, fewer accidents to the mother and child, fewer cases of sore eyes or blindness at or shortly after birth, an increased percentage of nursing mothers, increased birth registration, enhanced supervision of midwives, increased number of deliveries by physicians either at home or in maternity institutions and better home conditions in general.

Surely this is a goal worth striving for. We all become obligated therefore to direct expectant mothers as we meet them to those agencies prepared to give all necessary advice and instruction which make for better and healthier mothers and babies. Unfortunately, the Bureau of Child Hygiene has not at its disposal the necessary force of employees for the complete carrying out of an extended prenatal service. The number of nurses who devote their time exclusively to this function of the Bureau's activities is limited. These nurses, however, as well as all the nurses at the fifty-nine baby health stations throughout the city, though to a lesser degree, are prepared and willing to guide expectant mothers from the time of conception through pregnancy, delivery and until the infant is one year old. Any expectant mother who presents herself at the various stations—provided she is unable to pay for the services of a private practitioner—will find the doctors and nurses in charge ready to advise and counsel her as to diet, hygiene, clothing, bathing, fresh air, rest, exercise, care of the teeth, skin, bowels and breast, importance of breast feeding, mental hygiene, etc.; to keep a watchful eye over her by periodic visits to the home, for signs of symptoms which are danger signals, to make regular urinary examinations, to demonstrate how articles necessary for the baby and for the expected confinement may be prepared at small cost, to show her how to prepare, within her means, the most essential and nutritious articles of diet, to arrange for examination and delivery either at home or at various maternity institutions, to secure special expert advice at maternity centres established at numerous points by the Maternity Centre

Associaion, to secure from many private agencies and individuals, material aid in the form of medical and nursing care, milk, food, fuel, ice, shelter, clothing, etc., to arrange for care at convalescent homes after delivery if necessary; in a word, to secure for her all that is required to make her pregnancy comfortable, her labor safe and her offspring strong and healthy.

No expectant mother in the City of New York need want for expert advice. It is hers for the asking. All that is necessary is that she know where it can be secured, and directing her to the various baby health stations of the Department of Health and other agencies engaged in similar work.

From Birth to the End of the First Year: Dr. L. R. DeBuys has said, "Every man was a baby. Unfortunately, most men have forgotten the fact. The adage, "do unto others as you would be done by," never had a greater application than when applied to the infant. Let us mature adults . . . put ourselves in the place of the infant. What would we like the adults of the nation to do for us? Then why not do for the infants and children what we would in their place have done for us."

We have become so accustomed, as stated before, to think of first aid in connection with dangerous or hazardous trades or industrial pursuits that we have considered the baby well protected against the pitfalls of life; and yet, it has been truly said that "the most dangerous occupation in the world is that of being a baby." It has, in fact, been estimated that the death rate among infants is from six to seven times higher than that of the soldiers in the trenches; that a newborn baby has less chance to live a week than a man of ninety and is less likely to live a year than a man of eighty; that an aviator who makes ascensions daily for a year has a greater chance of surviving at the end of that period than a newborn baby has of completing his first year.

You see, therefore, that being a baby is a serious and a dangerous business; that he must meet and overcome many obstacles; that he must fight his way through a "thorny thicket of infantile diseases and conditions that are just as dangerous or more so than fighting a Boche in the trenches with barbed wire entanglements on every side. A soldier can give battle, but a baby assailed by germs, bad air or bad heredity is very helpless indeed."

Yes, indeed, an infant is always fighting with his back against the wall; but he is a brave little fighter holding on tenaciously until the reserves of care, attention and diet are brought to his aid. And so we take up the baby from the day he is born until the end of his first year, keeping in mind and appreciating, to use the vernacular of the day, "what he is up against."

We have noted the large percentage of infant deaths under one year of age due to congenital diseases which follow largely in the wake of an indifference or neglect of the expctant mother. Let us not, however, fail to exert whatever influence we can toward conserving the health and life of the babies that are born alive and to bring to them every possible resource at our command. Let us not fail to remember that "it is not the babies born, but the babies saved that count." In infancy, to wait until first aid is actually needed or indicated, may be too late. We must never fail to keep before us that the best first aid for infants is the aid which will never be necessary, and that prevention is easier than and superior to correction. We must always remember that it is better to be careful than sorry and better to be too careful than not careful enough.

There are certain basic principles, certain essentials or fundamentals necessary at all times for the saving of infant life. War conditions simply make it imperative to carry them out on a more extended scale. Let us take them up in order:

1. The great secret in conserving infant life lies in reaching the baby as soon after birth as possible, before aggravated errors of hygiene, diet and care have handicapped him, exposed him to disease and reduced his vitality and resistance. This is something that must be impressed upon parents. Over one-third of all deaths under one year of life occur during the first month and over fifty per cent during the first three months of life. Start the baby right early in life and you give him a health asset which will serve him in good stead throughout life. Many of the disturbances of digestion, and many other conditions which render the older child and adult susceptible to disease have their origin in insults to the various organs in the early months of life. Supervision of infants, as early in life as possible, is the fundamental policy of the Bureau of Child Hygiene of the Department of Health, and all efforts of the baby health station service are made in this direction. We ask you, therefore, to urge all parents who are able to pay for the services of private physicians to keep this

fact in mind and to advise those who are unable to pay for such services to register the babies early in life at the various baby health stations.

2. If we were asked what single measure above all others makes for the reduction of infant morbidity and mortality, we would unhesitatingly say breast feeding. It seems strange, but it is true, nevertheless, that infants breast fed thrive even under conditions that are most unfavorable. It is unnecessary to enter at length into the many advantages which a breast-fed baby has over one artificially fed. Suffice it to say, that experience the world over has shown, that 75 to 85 per cent of all infantile deaths occur in those artificially fed and that of all infantile deaths from diarrhea, 90 per cent take place in babies artificially fed and 10 per cent in babies fed on the breast. Breast-fed babies not only gain in weight more rapidly, thrive more readily, develop better, but they resist disease and infection to a greater degree. There is something about breast milk—that indescribable "something" if you will—which enables the baby "to put up a better fight" against the many dangers with which it is surrounded daily. During war times in particular, there must be no relaxation in the number of babies who are breast fed. The vast majority of mothers can nurse their babies if they will, if they are but shown the various ways and means whereby this can be accomplished. Breast milk is the baby's right, and he should not be deprived of it unless it is absolutely necessary. It is the mother's duty to nurse her baby unless conditions make it impossible, and motherhood must not be sacrificed for society. So important is maternal nursing in its relation to infant mortality that Jacobi has said, "By breast feeding you will save 100,000 babies that now die or become invalids from no other cause but unnatural feeding." Although the cow's milk is sold in large quantities at the baby health stations, as hereafter noted, the importance and advantages of breast feeding are always emphasized and maternal nursing is always advised, encouraged and urged. The policy of the Bureau of Child Hygiene is to permit no child to be artificially fed unless all efforts at breast feeding have failed and all necessary dietetic, hygienic, medical and other measures have been tried. We are proud of the fact that the largest percentage of infants registered at the baby health station are either breast fed exclusively or

partially. The inspectors and nurses at the baby health stations have to be shown that maternal nursing is absolutely impossible before they countenance a resort to artificial feeding. So strongly do we feel upon this subject that we agree entirely with the statement of Dr. MacMurchy, that "a mother should not sublet her duty to a cow." One of the most important patriotic services of motherhood in these days is to spare no effort to nurse the baby.

3. War or no war, we will always find that a certain percentage of infants will be or must be artificially fed because of indifference or neglect of the mother or because of unavoidable circumstances, such as illness, industrial pursuits or other economic and social reasons. This percentage will vary in different communities. It behooves municipalities, therefore, to place at the disposal of these infants the best possible substitute for mother's milk in the form of a safe, clean, wholesome cow's milk. The growing infant must have milk in sufficient quantity and of proper quality, in order to maintain his nutrition, growth and development. There is no other food that can take its place. Cow's milk, when properly prepared, according to the child's age, weight, digestion and tolerance, has all the elements necessary for good digestion, assimilation and growth, and ounce for ounce, even at a reasonable advance above the prevailing market price of peace times, is the most economical and nutritious food for infants and young children. In general terms, one cent outlay for milk purchases more food units than a similar outlay for meat or eggs. But, apart from the consideration of cost, milk is a vital necessity and indispensable food for infants artificially fed, and indeed for pregnant women and nursing mothers, since they should have a sufficient quantity of this food in order to properly conserve their health and that of their babies. The public should be made to realize this fact and should be willing, within reasonable limitations, to pay the advanced price in the cost of milk. Otherwise, there arises the grave danger of the farmers sacrificing their cow herds and selling them for meat. Cows should be made to serve as permanent sources of food in the form of milk rather than as temporary sources of meat supply. The City of New York offers through its baby health stations, a high grade of milk, Grade A Pasteurized, which sells at the fifty-nine Baby Health Stations in the Greater City at present at thirteen cents per quart bottle. This is from three to three and a half cents lower than the prevailing market price of a

similar milk. Prices fluctuate, of course, with conditions, but the Department of Health is in a position to offer this grade of milk to the needy public always at a price below that of open market. This milk is not sold, however, indiscriminately, but only to those families whose economic condition is such as to prevent them from paying market prices and for conditions that warrant or necessitate the use of milk. The opportunity for securing a high grade of milk, therefore, by the poorer classes, is an aid of considerable importance to the infant. This milk is sold—almost six million quarts annually—to expectant mothers, nursing mothers, babies under two years of age artificially fed, older children suffering from malnutrition or disease, adults with constitutional diseases such as tuberculosis, Bright's disease, heart disease, and upon the presentation of necessary credentials from accredited physicians or social, philanthropic and other agencies. While pure milk alone will not solve the infant mortality problem, it is a contributory factor of considerable moment. Education assumes first place in all baby-saving campaigns and programs. A wider knowledge of the existence of these baby health stations, their location, the opportunities and advantages which they afford, the education in all matters of child diet, hygiene and care, which they are prepared to extend at these centres and in the homes, should be common knowledge with every citizen of this community.

4. We have attempted to show the great superiority of prevention over that of correction as a more rational, more constructive and more productive method of approach in the conservation of infant life. Saving babies by treating them when they are ill has long since become passé. "Keep the well baby well" is the modern public health way. Saving of baby life becomes, therefore, more a matter of bringing to those in need and want and those whose environmental conditions endanger the health and life of infants such aid and effort as will help to materially reduce the many avenues of danger to which they are exposed. The economic conditions of the present day make the social service activities of municipal nurses more imperative, and you will find that the nurses of the Bureau of Child Hygiene, through their close and intimate touch with the various Mayor's Committees and the many social, charitable and philanthropic private agencies and individuals are in a position to bring much

material relief into the homes of those in need. It is apparent that in war times, the demands for relief will be in excess of normal days, and referred to the Baby Health Stations of the Department of Health any cases of want or privation which react more particularly in an unfavorable way upon the infants, the necessary machinery for securing relief will be set in motion at once. Milk, other foods, clothing, fuel, ice, shelter, money and other forms of material aid, which are life-saving measures for infants and which help to keep families intact, will be secured by the municipal nurse. Pauperization will always be avoided, but if want exists, unrelenting effort will be made to secure relief.

5. No one can foretell what will ultimately be the relation of women to the needs of this world war. If we are to follow in the footsteps of Great Britain, it is not unlikely that the dilution of labor which has assumed such great magnitude there and has caused a large number of women to enter fields essential for the proper conduct of war, such as shipbuilding plants, munition factories, gas mask factories, etc., may arise in this country. Every baby craves a mother's care. It is the experience the world over, that the infant mortality rate of babies confined to institutions is far greater than in those given individual care at home. Institutionalism in most instances spells death for infants. If war, therefore, necessitates the withdrawal of many mothers from the home, it will be necessary to give infants the next best substitute for that mother's care, and that next best substitue is a clean, kind, indulgent and careful foster mother. The time may come when women, who are not forced into industries, will be called upon to safeguard the lives of infants and young children of their neighbors, and it will become their patriotic duty to measure up to the importance and sacredness of their positions; and if this becomes impossible the need for the establishment of day nurseries in connection with or adjoining the various plants, factories and other establishments, where these mothers may nurse their infants several times during the day, or where, if the infants are artificially fed, trained nurses may see that the food is properly and carefully preserved, prepared and given, and where the infants may secure the necessary rest and quiet, will have to come to pass. It is confidently hoped that mothers will be enabled to remain with their infants, but if this becomes impossible it behooves every one to

aid in securing for the babies the most favorable conditions consistent with the necessary measures to win the war.

6. During war times, more than ever, the older girls of the family, the potential mothers, are destined to play an important role in child conservation. With many mothers forced to engage in gainful occupation, either because of the draft, because of disproportion between the income of the main wage earner and the cost of living, or because of war needs, the responsibility of caring for the baby of the family will fall upon the shoulders of the older girls. Properly instructed, these school girls of twelve to fourteen years of age become allies of great value in the conservation of baby life. Neglected or uninstructed, they are capable of causing great harm. The Bureau of Child Hygiene of the Department of Health, through its organization of Little Mothers' Leagues at the Baby Health Stations and public schools—with a membership of from fifteen to twenty thousand annually—has accomplished results in the saving of infant life difficult to imagine by those who are unacquainted with this work. These girls are given didactic and practical instruction in the important matters bearing upon child diet, hygiene and care, by the nurses and doctors, and as a result thereof have taken excellent care of their charges. The amount of knowledge acquired by these girls is remarkable, and the application of it, truly inspiring. They not only take care of their own brothers and sisters, but they act as neighborhood missionaries to others. They bring educational lessons into the home which improve family conditions, besides preparing themselves for future motherhood. These leagues have been part of the activities of the Bureau of Child Hygiene since 1910, and have been responsible, in no small measure, for the pronounced reduction of infant mortality in the city. In war times, such leagues should be extended. It is not only among the children of the tenement, those of foreign extraction mainly, that such organization is necessary. Native children of native stock stand sorely in need of the instruction available in this way. It is for us to urge as many older girls as possible to become members of the Little Mothers' League of the Baby Health Station nearest their home or of the school which they attend, preferably that of the Baby Health Station, since here the leagues are continued the year round, whereas at the schools they are generally organized only during the summer months.

7. The disease groups which are responsible for the largest mortality among infants are congenital, respiratory, diarrheal and contagious. The importance of the control of the congenital diseases has been noted. Time there was when the number of infant deaths from what is commonly termed "summer diarrhea" was so great that it practically controlled the curve of infant mortality. As a result, however, of improved milk supply and supervision, of the opening of baby health or welfare stations and a widespread educational propaganda on infant care, the infant mortality rate from this condition has been very materially reduced, so that summer diarrhea is no longer the bugbear of sanitarians. In point of fact, the congenital diseases have now assumed the non-enviable position of first place in the list of baby-killing diseases, with respiratory diseases second and diarrheal diseases third. Next to the control of congenital diseases, our attention must be directed to the respiratory diseases, which occur either primarily in the form of various types of pneumonia or secondary to the common contagious diseases—measles, whooping cough and diphtheria. Economic conditions associated with the war have disturbed the living conditions of many. Numerous families have been forced to double up, as it were, or to take smaller quarters, and rooms which in normal times harbored a family of five, not infrequently hold ten or twelve. The congestion and overcrowding caused thereby, together with the inability to secure the necessary supply of fuel, as well as proper food and clothing, were responsible last winter for a large increase in the number of deaths from respiratory and contagious diseases in infants and young children. With windows tightly closed, with people huddled together in one room or in one bed the atmosphere became vitiated, and the infants and children became the greater sufferers. The public should be educated as far as possible to these dangers. Sleeping quarters should be aired and overcrowding should be avoided as much as possible. Every energy should be directed toward giving the required fuel to the needy. The Mayor's Committee of Women on National Defense, and the generosity of the public at large, accomplished a great deal in relieving the suffering last winter. Efforts must be redoubled with the approach of cold weather. This is a first aid to the infant which even the humblest is capable of contributing toward, if only in a small way.

8. Universal education in child care that will prevent all illness in infants is a Utopian dream. Despite every attention, some babies will sicken and die. Just as prevention is the best first aid for keeping well babies well, so emergent first aid in sick babies will do much to reduce the number of infant deaths—to make sick babies well. The Bureau of Child Hygiene of the Department of Health maintains an emergency corps of medical inspectors who are on duty night and day throughout the entire year for the emergent treatment of sick babies whose parents are unable to pay for a private physician, for the purpose of securing their prompt admission into hospitals and for making arrangements for necessary medical and nursing care at home through an outdoor dispensary service or nursing settlements. The Babies' Welfare Association, with the central office in the Bureau of Child Hygiene, arranges for prompt admission of sick babies into hospitals and for their later care at convalescent homes. This service is at the disposal of the public, and immediate attention will be given to the request of any citizen.

PREVENTION OF CONGENITAL SYPHILIS BY ANTISYPHILITIC PRENATAL THERAPY (Cali. State Jour, Med. Aug., 1918). Most cases of congenital syphilis have been preceded by two or three miscarriages, premature births or stillborn children due to syphilis. Proper treatment of acquired syphilis before pregnancy will to a considerable extent diminish this waste, which can at best be only partially controlled. But intensive treatment of every syphilitic mother during her pregnancy will (*a*) prevent miscarriages, premature births, and stillbirths due to syphilis, in the vast majority of cases: (*b*) produce a live child at full term who will not develop congenital syphilis, in the majority of cases. Such treatment does not interfere with the normal course of pregnancy, labor or puerperium. Lisser urges that such antenatal therapy should be widely advocated by medical men of prominence and influence, in order that it may become a well established routine procedure. Immediate widespread adoption of this method will insure a large increase in the future population of the world.—*Jour. A. M. A.*

SOCIETY REPORT

THE NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS

Stated Meeting, Held March 13, 1919

SYMPOSIUM ON INFLUENZA

MURRAY H. BASS, M.D., *in the Chair*

BACTERIOLOGY OF INFLUENZA IN YOUNG CHILDREN

DR. MARTHA WOLLSTEIN stated that in the early days of the epidemic it was said that children were not affected by the disease, but that was a fallacy. Dr. Hatfield found that there were 50 suffering from influenza among 339 children treated in the contagious hospitals of New York City.

From October 1 to Novemebr 15, 1918, 36 cases of bronchopneumonia with influenza were admitted to the Babies' Hospital, while during the same 6 weeks in 1917 only 7 such cases presented themselves. The mortality rate from pneumonia in 1917 was 15.8 per cent, while in 1918 it was 57.7 per cent. Of 36 children in 1918 who had bronchopneumonia and influenza, 12 recovered and 24 died, a mortality of 66.6 per cent. Of the 24 fatal cases in this series, 18 came to autopsy and these formed the basis of the present study. In the fatal cases cyanosis was not by any means a constant feature. The leucocyte count also varied. One patient who did not present any consolidated lung tissue at autopsy had had a leucocyte count of 34,000 and 60 per cent polymorphonuclears during life. The leucocytosis was accompanied in every instance but one by pneumonia. The average duration of illness in the fatal cases was 7 days. Complicating conditions in the fatal cases varied, including one child with marked lesions of congenital syphilis, miliary tuberculosis, ulcerative colitis and pyelitis. The influenza bacilli were present during life in overwhelming numbers in 13 of the 18 cases; that they were not found in the others was probably because of the difficulty of obtaining suitable specimens for culture from the prostrated patients. The other bacteria present were pneumococci, staphylococci, micrococci catarrhalis and streptococci, in the order of frequency named. Only type IV pneumococci were found. Of the cases coming to autopsy, the influenza bacilli were cultivated in large numbers from all the cases, but never in pure culture. The influenza bacilli were found twice in the heart's blood. In this series of cases only one case of meningitis developed. This was due to the pneumococcus and the influenza bacillus was not present in the spinal fluid. Morphologically and biologically the influenza bacillus isolated from these children did not differ from respiratory strains isolated from endemic cases in other years. It was a short pleomorphic, gram-negative bacillus, strictly hemoglobinophilic, growing in the characteristic dew-drop colonies on agar. On animal inoculation the organisms also conformed to the respiratory strains in that they were not pathogenic for rabbits or guinea pigs, but they were less virulent for mice than is usually the case with strains of influenza bacilli isolated from the respiratory tract. The failure of animal inoculation might be due to the highly "humanized" condition of the bacilli. The organism was highly invasive for every part of the respiratory tract though it rarely entered the blood stream.

The cases showed a variety of pulmonary lesions, making the characteristic picture of congestion, edema, general bronchitis, scattered pneumonia lesions of differing age, but involving two or more lobes, subpleural hemorrhages and pleural exudate being present. Capillary hemorrhages in other viscera were constant. The most marked and characteristic pathological features were purulent infiltration of the alveolar walls and septa, hemorrhages and suppurative bronchiolitis. The capillaries and all the large vessels were distended with blood.

SOME CLINICAL MANIFESTATIONS OF INFLUENZA IN CHILDREN

DR. LINNAEUS E. LA FÉTRA said that the influenza epidemic of 1918, as it affected New York last autumn, cannot but be regarded as a veritable plague. Nothing like it has been experienced in this generation.

Two features especialy stand out with regard to this epidemic: first, the wide prevalence of the disease through all classes and ages, and second, the great number and the exceedingly high mortality of the cases with pulmonary complications. Early in the epidemic it was stated that infants and young children escaped the disease, but this was distinctly not true. It was true that the mortality among children was very low as compared to that among young adults, and especially as compared with that of pregnant women. As to the wide prevalence of the disease it may be noted that at Bellevue the Children's Medical Division has about 140 beds; during the epidemic in October, November and December the daily census rose to between 300 and 360, the rise all due to what must be regarded as influenza. During the months of October, November and December we treated in the Bellevue Children's Medical Division over 900 cases due to the epidemic. The great majority of these patients were not very sick, having only a moderate fever after the first day, with symptoms in the upper respiratory tract or pharynx. A large number had severe tracheitis. Only about 10 per cent of these had pneumonia or bronchopneumonia and of these about half proved fatal, the mortality being nearly all in the cases of bronchopneumonia. It was noted especially that when the children belonged to families in which the adults had pneumonia the cases were much more severe and apt to be fatal. A possible explantion of the generally lower mortality among children is that children are put to bed at once when they have a little fever or do not feel well. They therefore got the advantage of bed rest from the outset.

The cases met with might be divided as follows:

1. Those with high fever and prostration, but without physical signs of any localization. The fever in these cases was apt to vary widely between morning and evening, ranging from 100° in the morning to 103° or even 106° in the evening, occasionally coming down as low as 96° within a few hours. When the temperature was high the patients were badly prostrated, showing signs of general toxemia, but when the temperature was normal or nearly so they were bright, had good appetite and digestion and seemed quite well. Often when the temperature was high, the child would show no evidence of fever in the way of fretfulness, drowsiness or prostration.

2. Cases with rhinitis or pharyngitis, or both. The greatest number of patients seen at Bellevue were of this type, numbering more than one-half the cases. The pharynx was red and glazed, often with the lymph follilles on the posterior pharyngeal wall red and swollen. It is surprising how slight an amount of phyaryngitis can apparently be the cause of high fever in infants and young children. Acute follicular tonsilitis alone was very seldom seen among these cases, but often the tonsils were red

and swollen in connection with the general redness of the nasopharynx. When the tonsils were swollen the adjacent cervical glands were apt to be involved and when this occurred the fever would persist until the swelling of the cervical lymph nodes had subsided.

3. An important group of patients were those suffering with tracheitis and laryngitis. Tracheitis was far more frequent than laryngitis and was frequently combined with either rhinitis or bronchitis. A characteristic symptom is the loud, barking cough which is almost incessant and in younger children frequently so severe as to be followed by spasm of the larynx. The crowing inspiration, together with the cough, is suggestive of whooping cough and is undoubtedly due to the same mechanical condition, namely, a mass of tenacious mucus at the lower part of the trachea. For these patients the most satisfactory treatment was to put them in a large room in which there was a constant vapor of steam with creosote. To each quart of water in a croup kettle 30 drops of creosote were added, and this kept boiling constantly. Dry air, either cold or warm, was found to aggravate the cough.

4. Cases with bronchitis. There was nothing peculiar about the bronchitis cases except that the smaller tubes were more apt to be involved and there was commonly associated some inflammation of the upper respiratory tract, especially the trachea. However, the severe cases were apt to develop into bronchopneumonia.

5. Cases with pneumonia. About four-fifths of the cases with lung involvement took the form of bronchopneumonia. This is in strong contrast to what usually obtains in infants and children in whom the prevailing type in more than half the cases is lobar pneumonia. The bronchopneumonia is peculiar in that the signs develop very slowly and irregularly except in cases that are overwhelmed by the disease. Pleuritic crepitations are found in the bronchopneumonia of influenza far more often than in ordinary bronchopneumonia. Moreover, empyema occurred in 5 of the cases, an unusual complication in ordinary bronchopneumonia.

Cyanosis was present in only the severest cases of capillary bronchitis and bronchopneumonia, but the spectrum of the blood failed to show methemoglobin in the only marked cases we investigated. The occurrence of cyanosis is not frequent in children suffering from influenzal pneumonia, in contrast to what obtains in adults.

The most peculiar feature of bronchopneumonia cases was the occurrence in 6 instances of interstitial emphysema. Apparently this symptom occurs only in the severest cases, for 5 out of the 6 died. The one child that recovered had a double bronchopneumonia of rather chronic course. Emphysema appeared all along the right side of the neck and thorax. By means of overlapping rubber straps, that side of the chest was put at rest, and the emphysema gradually disappeared. He would perhaps have survived without the strapping, but it seemed rational to prevent movement of the lung with further increase of the emphysema.

As sequelae of the bronchopneumonia there is frequently some thickening of the bronchi or intra-alveolar infiltration, as determined by the x-ray plate. This leads to the radiographic diagnosis of pulmonary tuberculosis, but in two cases I have been able to follow, x-ray plates, taken after 3 months, have shown a return to normal lung shadows.

The gastrointestinal tract is seldom involved in the inflammation. In 2 cases, however, there was bloody dysentery with much blood in the stools. The kidneys were not especially involved.

Very noteworthy in this epidemic, as compared with former ones, was the infrequency of otitis media and of influenzal meningitis. Absence of influenzal meningitis was also very notable. In no instance was this condition found, although meningitis occurred in 3 cases: in all of these the meningococcus was the causative organism.

With regard to the treatment of influenza, there is nothing specific to combat the disease directly. Even for prophylaxis, vaccines, from which so much was hoped and for which great claims were made, do not seem to have brought about results that were definitely advantageous. For the general treatment of the disease the most important thing is rest in bed from the very beginning until convalescence is well established, the patient not being allowed out of bed until after 4 or 5 days of normal afternoon temperature. The next most efficacious measure is the hot tub bath repeated 2 or 3 times during the twenty-four hours. The temperature of the bath should be 2 or 3 degrees below that of the patient and the body should be thoroughly rubbed during a period of 5 to 10 minutes while the patient is in the tub.

In all cases of capillary bronchitis and bronchopneumonia and in many cases of lobar pneumonia the early use of digitalis is of distinct advantage, even if given for only 24 hours at the outset, since this produces digitalization of the heart which permits the more effective use of digitalis later, should the need for it arise. As the course of the disease is very uncertain, and relapses and reinfections of the various systems are not at all infrequent, it is necessary to make a very careful examination of the throat, ears, and lungs each time the patient is seen, unless the temperature is absolutely normal.

THE RELATIONSHIP OF BACILLUS INFLUENZA TO THE PANDEMIC

Dr. Anna Williams said that certain observations concerning the incidence of influenza bacilli during inter-pandemic periods may be accepted as observations of facts.

These observations and some deductions from them bear repetition, especially at the present time, because of the number of confusing statements made in several of the recent articles on the part played by the influenza bacillus in the pandemic of 1918.

1. Influenza bacilli are found in the upper part of the apparently normal respiratory tract of humans in a comparatively high percentage of cases.

2. They are present in the respiratory tract in a much higher percentage of cases and in much larger numbers during certain diseases (besides clinical influenza) in which the respiratory tract is affected, notably in measles, pertussis and tuberculosis.

3. They are found, often in apparently pure culture, in the sinuses connected with the respiratory tract.

4. They are found, often in apparently pure culture, in acute contagious conjunctivitis and in many subacute and chronic conditions of the eye, included under the term trachoma.

5. They are found with other organisms in inflammations of other mucous membranes of the body, as in appendicitis and genitourinary inflammations.

6. They are found, often in apparently pure culture, in middle ear infection and in meningitis.

7. They are found in inflammations of other serous cavities, such as peritonitis, arthritis, pleurisy, etc.

8. Hemoglobinophylic bacilli, so far indistinguishable from influenza bacilli, have been found in the mucous membrane inflammations of the lower animals.

In short these organisms are almost as ubiquitous as the streptococcus group and any evidence of the etiologic factor of the recent pandemic which is based merely on the presence of the influenza bacilli in the lesions must take cognizance of this fact. This also makes it difficult to explain the reason for the failure of certain observers to find the bacillus influenza. That all the strains of hemoglobinophylic bacilli, morphologically and culturally similar to the influenza bacillus, isolated from these various sources are one type or one race from the standpoint of antigen or antibody production is inconceivable, judging from our knowledge of the better studied groups of organisms. But that there are distinct serological types among them and that one or more of these may increase in virulence or toxic power for man or animals we do not know. In fact very little minute study has been made of antigen and antibody production by this group of organisms. Dr. Wollstein has shown that there seems to be some morphologic difference between the strains she isolated from influenzal meningitis and those she obtained from the lungs in clinical influenza and that the meningeal strains were on the whole more virulent for rabbits and guinea pigs than the respiratory strains. From her serological tests, however, she concludes that all of these strains are somewhat related, but she did not do absorption tests in her agglutination work. In fact no one up to the time of this pandemic has controlled agglutination by the absorption of the agglutinins, and we have learned that in no other way can we be sure of this specificity of the agglutination reaction.

If the disease that swept over the world in 1918 is a real pandemic and if the initial or specific cause is the influenza bacillus, then one strain must have been evolved with special adaptability or virulence for the respiratory tract in man, and if such a strain is capable of producing antigens and antibodies that can be demonstrated, then, in order to show that there is a pandemic strain, we should be able to show that the majority of the strains, isolated from beginning cases before the peak of the pandemic was passed, produce the same serologic reactions.

The three serologic tests employed to show specific antibody relationships are, as is well known, agglutination, complement fixation and protective body content. If any one of these tests is at variance with the others it throws doubt upon the positive results claimed for the others, however positive they may seem to be.

If these tests are to be used to show type relationships among strains they must be made with high titre serums from test animals in order to get the clear cut reactions necessary to show specificity.

We realized from the beginning of our studies (as others have no doubt, though little emphasis has been placed upon it), that unless we could show specific serum reactions we would be adding little of importance to the evidence in favor of the influenza bacillus being the exciting cause of the pandemic. We therefore decided to try all the tests.

Agglutination and agglutination absorption gave us results sooner than the other tests with which we are still working. We have studied 165 strains by direct agglutination and 82 of these by absorption, using monovalent rabbit serums of high titre. We began studying our autopsy strains and one strain isolated from the lungs in 1911, and we found but few crosses by direct agglutination and none by absorption. We next studied the strains from a group of marines, all of whom became ill with the diease at about the same time, and the strains from the Home for Hebrew Infants. With our antiserums so far used (15 in all) we have found only 4 pairs of crosses in these series. If we find no more evidence of grouping among our strains we must conclude either: (1) That the influenza bacillus was not the exciting cause of the pandemic, or (2) that we have missed the pandemic strain, or (3) that the pandemic was only an apparent pandemic, and that there were innumerable foci of infection.

There are some facts in favor of the second conclusion, namely, (1) on our method of isolation, and, (2) its relation to the ability of the individual's own influenza bacilli to outgrow a pandemic strain.

DISCUSSION ON SYMPOSIUM ON INFLUENZA

DR. WALTER LESTER CARR said: "My experience clinically was similar to that of Dr. La Fétra.

The first patients admitted to the City Hospital showed definite and characteristic symptoms, the manifestations being prostration, laryngitis, tracheitis and bronchitis. Ordinary coryza was not present so often as congestion with nose bleed and considerable hyperemia of the conjunctiva, pharynx and larynx:—the laryngitis was sometimes so pronounced as to simulate croup. There were bronchial manifestations in many of the laryngeal cases; the bronchial signs being most usually in the base of the lung and accompanied by fine râles which were variable in their position. There would be crepitation under the right scapula and then after a few hours crepitation would be heard under the left scapula. In the bronchial type of the disease there were soft mucous râles. In a large number of the patients there were pleural râles.

Bronchopneumonia was common in limited and disseminated areas but there were confluent patches with decided dullness, usually at the base of the lung; although we had a number of patients with pneumonia at the apex. Intensified bronchial voice was observed in many pneumonias of small area.

The empyemas, as indicated by Dr. La Fétre, were comparatively few; we had about 4 in 200 cases and 3 of these children were operated upon, a limited number in view of the fact that pleurisy was found in the examination of many children. Subcutaneous emphysema was present in one child who died. Herpetic and erythematous eruptions were seen. The urine showed nothing of importance, and acidosis was not a feature. In some instances there was a little albumin and a few red blood cells. There were a few patients with pyelitis, but nothing characteristic or of special significance was detected in the urine examinations.

A few patients had acute colitis and some showed blood in the stools, but taking the whole series there were not many of this type. There were none with extensive hemorrhages that have been recorded in adult cases.

The early invasion was of a virulent form, with most of the manifestations in the respiratory area, a few patients showing disturbances of the gastrointestinal tract, as vomiting and diarrhea, and others having nervous manifestations, either with or without symptoms referable to the meninges.

At present, children are admitted with bronchial and peribronchial thickening, infiltration of the lung tissue and infiltration of the lymph nodes. Among the secondary conditions are cases of empyema. We can not be sure, but we think that many of these children had infection of the lungs in the early period of the epidemic. We are seeing children with symptoms somewhat similar to those observed in the early part of the epidemic but there is not so much congestion of the pharynx and the leucocyte count is higher than earlier in the winter.

Latterly we have had more cases of middle ear and mastoid infections than we had on the service early in the epidemic.

The conditions noted at autopsy ought to be commented on by a pathologist, but I may say that purulent bronchitis and peribronchitis have been noted and disseminated and confluent areas of consolidation have been found. The peculiar types of laryngitis and pharyngitis referred to and associated with swelling were found at autopsy and in some instances there was a condition practically amounting to ulceration.

Most of the blood counts in the early cases showed leucopenia, and the leukocyte count was low even with pneumonia. The blood cultures were negative, so, after observing one series, we discontinued making them.

The mortality was 3½ to 4 per cent. This, however, is not quite a fair statement as many of the children were taken home by their parents when their temperatures became normal and nothing is known of their subsequent history or the development of later complication.

The treatment consisted of general care, keeping the children in bed and making them as comfortable as possible, and routine washing of the nose and throat. These patients were so relieved by the use of Dobell's solution that many of them asked for its application. If a child had a severe cough codein with antipyrin, or codein and sodium bromide were administered. In treating the pneumonias, we did not find anything of special value but for the early temperature liquor ammonia acetatis was used and aromatic spirits of ammonia added when there was exhaustion. Digitalis did not seem to be indicated as the children had a low pulse rate and their respirations were rather low, so there was no apparent reason for its use. Some children who were blue and appeared to have the type of the disease frequently seen in adults, did well with stimulation. For them the use of aromatic spirits of ammonia seemed preferable and camphor was also given. Adrenalin had a transient effect without any lasting result. To increase the white blood count we tried horse serum but found that it had no effect whatever. We did not try any convalescent serum because we did not keep children on the service after 3 days of normal temperature and we did not use adult blood."

Dr. Henry Heiman said: "This epidemic has been extremely instructive to me, but as I did not expect to discuss the paper I have brought no special data from our service. However, I may refer to a few special types of the disease.

The previous speakers have mentioned the laryngeal and tracheal types. I recall 2 cases of that type in which the symptoms were so severe that they were rushed to the Hospital, bronchoscoped and x-rays were taken in a search for a foreign body. It was new to us to find this type with marked obstruction and edema of the glottis, giving these very alarming symptoms. These cleared up in 5 or 6 days and the children were sent home.

A second type were those cases in which there was bleeding from the mucous membranes. I recall one girl 6 years of age who passed 4 ounces of blood from the rectum. She was rushed to the hospital and kept under observation. She was discharged 2 weeks later perfectly cured.

Another type of case is that designated as pneumonitis. That is a good term because the infiltration attacks the parenchyma, the interstitial structures and the cell walls and produces the new signs which have led us to suspect the presence of fluid and to use the needle, often with disappointment when we find no fluid. In some pneumonias the infection is so overwhelming that we can say from the beginning that the child is going to die and there is no antidote in such cases. They are similar to those virulent cases of diphtheria in which the disease cannot be attacked by the antitoxin and the patient quickly succumbs because the infection is such a very virulent one.

As to the cyanosis, we have found the methemoglobin test negative but that is probably due to the marked obstruction involving the entire lung and sometimes bilateral.

We have had the meningitis type due to the influenza bacillus and we have injected antimeningitis serum. By the time we make the diagnosis it is not the fault of the serum if the cases do not recover. We need a way of making an early diagnosis.

The most interesting type of complications are the cases showing encephalitis, polioencephalitis and encephalomyelitis, where we are not sure whether they are due to the influenza bacillus, to the streptococcus hemolyticus or another type of streptococcus. These cerebral cases may be mild, moderate or severe. We have had 5 cases of this type postpandemic and we are keeping them to see what becomes of them in regard to duration and progress of the condition. Some of them have improved and some have not.

The infrequency of complications of the ear has been spoken of. These ear complications have been more frequent during the later period of the epidemic than they were during the earlier period.

I think we may account for the occurrence of a subcutaneous emphysema by a rupture of an air vesicle through either the pleura or the mediastinum.

I do not like to say much about treatment as there is very little to be said, the treatment being entirely symptomatic. So far as I can see we have nothing specific at the present time."

Dr. Seymour Oppenheimer said: "I have very little to add to what Dr. Carr and Dr. Heiman have said. Both Dr. Carr and Dr. Heiman have called attention to the fact that ear complications have been more frequent in the later group of cases than earlier in the epidemic, and that is in line with my experience. That may be qualified by saying that while many of these inflammatory conditions of the ear in the earlier epidemic did not require surgical interference they were characterized however by great persistency. In the later group of cases, more required surgery and the cases of accessory nasal sinus infection were, as well, very numerous. We have infections of the accessory nasal sinuses in the same sense as we have those of the middle ear. Every case of mucopurulent nasal discharge is not a simple case of rhinitis, but has an infection of the accessory nasal sinuses underlying, more particularly of the ethmoid cells, and I have seen many such infections during the present epidemic. I have had 3 cases of suppuration of the maxillary antrum in young children following influenza, one of which perforated infraorbitally. It is therefore as important to pay attention to the nose as to the ears as we may here find the cause of the temperature which is persisting. When we see a child going along with a temperature which subsides and then apparently without reason flares up, I am satisfied that very often there is a latent infection in the accessory nasal sinuses, or in the lymphoid tissue of the nasopharynx.

The cases of severe and distressing paroxysmal cough with laryngo-tracheitis or bronchitis, have been most frequent. The infection seems to have had a special predilection for the tracheal tree. During the last few weeks, I have seen many professional voice users with almost complete aphonia who showed no definite clinical signs of influenza, but I am satisfied that these cases of laryngo-tracheitis have an influenzal basis. Oft-times they have the paroxysmal cough that has been so pronounced among children.

There is one point I should like to emphasize since the pediatricians see so many children requiring surgical work on the nose and throat. I wish to advise against the performance of surgical operations until a goodly time has elapsed since the primary infection. An infection frequently remains latent and when the operation is done fresh avenues are opened up and the infection flares up and may cause severe complications. Hemorrhage, particularly, seems to have followed secondarily in an unusual number of cases operated too close to an influenzal infection. Several other laryngologists with whom I have discussed this have had a similar experience, so it is well to be particularly cautious in this regard."

Dr. William Shannon, said:—"I am not a bacteriologist, but certainly our clinical observations would seem to justify us in the belief that we are dealing, not with the influenza baccillus as we have hitherto known it, but with something new. The symptoms and all the aspects of the disease seen during the recent epidemic are entirely different from those observed in any other epidemic.

I want to ask a question about acidosis, which we have been hearing referred to so often and by so many eminent physicians. One eminent pediatrician treats all his cases of influenza with alkalies to counteract acidosis and I would like to know the opinion of those present in reference to that treatment."

Dr. Charles Hendee Smith said:—"With reference to the incidence of ear complications, my experience is not quite that of the previous speakers. As I saw this epidemic we have had two kinds of cases, the hospital cases in October and the private cases in January. In both groups there was a good deal of otitis. I have had 75 cases of acute purulent otitis media in 2 to 3 weeks.

Another point is in reference to operating on tonsils. I had under observation 2 small children who were suffering from desperate obstruction of the throat. All through the autumn I said they could not be operated on because of the influenza epidemic. The parents, however, begged to have the tonsils out, so I finally yielded and the tonsils were removed. Next day both children came down with influenza, and strange to say neither child was any sicker with the influenza than though the operation had not preceded it and recovery from the operation was not interfered with by the presence of the influenza. We, of course, felt anxious but both children made good recoveries."

Dr. Murray H. Bass said:—"I was interested in Dr. Oppenheimer's remarks about the congestive conditions in the throats of people who showed no symptoms of influenza. I examine daily about 150 children for the Society for the Prevention of Cruelty to Children and it was interesting to note this winter the number of children with congestive conditions of the throat. Following the acute epidemic, when 64 of the children came down with influenza, for a period of 6 weeks about 50 per cent of the children had extremely congested throats and the lymph follicles were extremely prominent. We thought these children were all candidates for influenza but very few of them came down. The same thing was noted at the draft board, many men having extremely congested throats. If we had seen such throats at any other time we would have considered those men very dangerous individuals.

As to the persistent tachycardia, I have seen this in children after very light attacks of influenza. I saw one such case in a child whose temperature was only 101° during his attack of influenza (and I am sure he had influenza because both parents had the disease) and yet he had a rapid pulse and dyspnea on exertion for 5 weeks. I also saw one child with subcutaneous emphysema which started at the clavicle and spread rapidly upward and downward and the child died in 24 hours."

Dr. Wollstein said:—"I only want to add that I have obtained cross reactions with the complement and agglutination tests but I have not made the absorption test."

Dr. Carr said:—"My experience with the heart condition has been the same as Dr. Bass's. I have seen the heart become irregular with a low blood pressure. Boys sent back to school after attacks of influenza were reported to be short of breath and very tired after walking up stairs. There were also nervous phenomena, such as night terrors, in addition to transient neuralgias.

Ear complications were as stated before, noted, but few children required operations during the first weeks of the influenza. It was the opinion of the visiting otologists that there were few cases having ear complications while the disease was acute but lately with a milder infection middle ear invasion is more common."

Dr. La Fétra, in closing said:—"In the matter of blood counts, I have met with great variations. I have met some with a low leucocyte count, with low polymorphonuclears and some cases with a high total and polymorphonuclear count. The variation in the counts probably depends upon the complicating pharyngitis bronchitis or bronchopneumonia.

As to Dr. Shannon's questions with respect to treatment with alkalies in cases of acidosis, there was no noticeable tendency to acidosis in these cases. So far as the alkaline treatment is concerned, we know that every inflammatory condition has a tendency to lessen the alkalinity of the blood and it is therefore desirable to give fruit juices and other remedies that favor an increase in the alkalinity of the blood.

The tachycardia that follows the disease has been noted by everyone who has followed the severe cases, and the older children require more care after an attack of influenza than the younger ones. This is because the small child has a large heart in comparison to the size of his body and as he grows larger the heart gradually becomes smaller in proportion."

Dr. Williams, in closing, said:—"I might say a word about influenza vaccines. Just as soon as we began to find the influenza bacilli last autumn, we decided to make a vaccine. At that time we were almost sure that the influenza bacillus was the initiating cause of the disease, and we thought that if we could use the vaccine successfully it would give us proof as to the cause of the disease. You probably all know that we have not been able to get clear cut results from the use of the vaccines. That is in a great measure due to the clinicians. We have not been able to have our controls or to get good reports and, indeed, many of the reports have amounted to nothing. We have tried to get reports from physicians of families who have not used the vaccines equaling in number those using the vaccines and thus acting as controls, but apparently we have not been successful in carrying out these plans. Even in institutions they wanted all the inmates to have the vaccines or else none. We were able, however, to get some controls in institutions, but we did not get very good reports from many of these. On the whole the reports have been extremely unsatisfactory in important details from the side of the people who have given the vaccines."

ACTIVE IMMUNIZATION OF INFANTS AGAINST DIPHTHERIA (Am. Jour. Dis. Child., Aug., 1918). A Zingher would have all infants below 12, and if possible below 18 months of age, actively immunized with three doses, each 10 c.c. of toxin-antitoxin. These injections should be given irrespective of the Schick test the infants may show at the time of immunization. The injections are given subcutaneously in the arm below the angle of the scapula, and repeated every seven days. The toxin-antitoxin is well tolerated by young infants, and for that reason the dose advised is the same as that given to older children. The relatively larger dose of toxin-antitoxin will, of course, also give rise to a better immunizing response. All children over 18 months of age, as well as all youths and adults, should be tested with the Schick reaction first, and only those giving a positive reaction immunized with toxin-antitoxin. Three injections, each 10 c.c., are given subcutaneously, one week apart. In infants below 18 months of age the Schick test is not a necessary part of the immunization, since all the infants should be actively immunized. The toxin-antitoxin mixture should be prepared in a reliable laboratory and carefully tested for potency in the guinea-pig before it is sent out for use. The mixture used should be slightly toxic and should represent about 85 per cent. of a lethal plus to each unit of antitoxin.—*Jour. A. M. A.*

DEPARTMENT OF ABSTRACTS

ORIGINAL CONDENSATIONS OF CURRENT PEDIATRIC LITERATURE BY THE EDITOR AND FOLLOWING ASSOCIATES

T. Wood Clarke............Utica, N. Y.
Charles E. Farr.........New York City
Howard K. Hill.......Philadelphia, Pa.
William Lyon............Jackson, Mich.
John B. Manning....Seattle, Washington
Stafford McLean.........New York City
Carlo D. Martinetti........Orange, N. J.
Mills Sturtevant.........New York City
Samuel W. Thurber......New York City
Eugene F. Warner......St. Paul, Minn.

GREIG, DAVID M.: FRACTURE OF THE CERVIX FEMORIS IN CHILDREN. (Edinburgh Medical Journal, February, 1919, p. 75.)

The author reports 3 cases of fracture of the neck of the femur in children aged 2, 5 and 15 years respectively. The salient symptoms were lameness and pain. In 2 of the cases there was no displacement of the hip, but in the third, the displacement was probably due to attempts made to make the child bear its weight on the injured hip. There was no eversion of the limb or crepitus. Greig states that the absence from children of those signs which are characteristic of fracture of the neck of the femur in adults must be accounted for by the physical differences between the periosteum of infancy and age, by the relative difference of the weight and size of the lower limb to the trunk in children as compared with adults, and by the ease with which a child can be moved and transported. The diagnosis must be confirmed by radiography.

C. A. LANG.

KING, W. W.: EARLY DIAGNOSIS OF CEREBROSPINAL MENINGITIS BY THE EXAMINATION OF STAINED BLOOD FILMS. (Journal A. M. A., December 21, 1918, p. 2048.)

The author reports a case in a girl aged 4½ years, in which a diagnosis of cerebrospinal meningitis was made from stained blood smears. The case was very acute, beginning with a slight rhinitis lasting several days, without fever or any particular discomfort, followed by headache and severe pain in the right shoulder. Several hours later she developed high fever and vomited several times, accompanied by convulsions lasting several hours. Twelve hours following the onset of fever, she was in coma. Scattered over the cheeks, arms and body was a diffuse hemorrhagic eruption. Two smears were made from blood taken from the lobe of the ear and these were stained by the Gram method. There were enormous numbers of leucocytes in the smears and numerous gram-negative diplococci, all intracellular, were found. They were characteristic of the meningococcus in size, morphology and staining reaction.

King concludes that to determine its diagnostic value it will be necesasry to ascertain: (1) the frequency with which the meningococcus may be so found; (2) the number of slides necessary to examine before a negative result can be announced, that is, the quantity of blood required; (3) whether it is in the very severe or fulminating cases only that it may be found; if longer search may not show it in the milder cases also; (4) if not demonstrable practically in the milder cases, in what degree of severity it may be expected; (5) in those cases in which it may be encountered, how early and how late this may be possible.

C. A. Lang.

Bronson, A. E., and Sutherland, G. A.: Rupture of an Aortic Aneurysm in a Child. (British Journal of Children's Diseases. October-December, 1918, p. 241.)

Bronson and Sutherland report a case of a child, 4½ years of age, who complained of pain in the chest. He talked and cut his teeth early, but did not walk until 3 years old when shortness of breath first became apparent. Pulsation was visible in the epigastrium and over the left rib cartilages. The apex beat was in the sixth interspace ½ inch outside the nipple line. Over the inner portion of the right second, third and fourth intercostal spaces there was visible and palpable pulsation with corresponding dullness. The area of pulsation measured 6 inches transversely. On the other hand, cardiac dullness to the left of the sternum was not marked. In the third left interspace a soft systolic murmur was heard; while over the dull area to the right of the sternum the murmur was loud and the second sound exaggerated. Radioscopy showed a pulsating mass to the right of the sternum corresponding to the dull area on percussion. The child had for 3 weeks an afternoon temperature of 100° to 102°. He had occasional slight catarrhal signs in the lungs, a hacking cough was present continually, and at night this became paroxysmal. The pulse ranged from 76° to 110°, the higher rate occurring only when the temperature was elevated. Seventeen months later, while in ordinary health and undressing he fell down dead. The necropsy showed 16 ounces of clotted blood in the pericardium and a fusiform aneurysm of the ascending arch of the aorta which had ruptured. There were no degenerative changes in the myocardium or endocardium; there was a small opening between the two auricles. Except for this defect, and the aneurysm, the heart appeared quite normal. The wall of the aneurysm was thickened due to hyaline sclerosis and stenosis of the aorta beyond it. The dilatation and sclerosis was evidently due to the stenosis. Against a syphilitic origin were absence of Wassermann reaction and of spirochetes, and limitation of the disease to the portion of the aorta subjected to the abnormal pressure.

The authors consider this aneurysm to have been due to a congenital defect in the development of the aorta. This conclusion was strengthened by the presence of other congenital defects; namely, the shape of the head with the full high forehead, the large ears, the slight mongolian slant of the eyes, the subluxation of joints, a diaphragmatic hernia, and by the absence of any inflammatory changes in either heart or aorta. A partial stenosis between the insertion of the ductus arteriosus and the origin of the left subclavian artery had resulted in a fusiform dilatation on the proximal side in an otherwise healthy aorta. C. A. LANG.

SHEEHAN, JOSEPH EASTMAN: FIVE RECENT BRONCHOSCOPIC AND ESOPHAGEAL CASES. (Medical Record, March 1, 1919, p. 361.)

Esophagobronchoscopy is not a dangerous procedure according to Sheehan, if performed by one who has an intimate knowledge of the throat, esophagus and lungs, and is skilled in handling the instruments. Great gentleness is necessary, along with untiring patience and manual dexterity. The accidents which now may occur are not usually due to an improper manipulation of the instruments, but depend more upon the nature, position, size, and length of time which the foreign body has been swallowed or inhaled. Nothing can be gained by hurrying in one's work. It must always be borne in mind that the patient is much safer with a foreign body in the esophagus or air passages than he would be if it were ruthlessly torn out. The great temptation after locating a foreign body is to grasp it immediately and remove it at all hazards. Rarely is it necessary to remove a foreign body immediately. It is always better to desist from any procedure until the case has been thoroughly studied.

If performing bronchoscopy for diagnostic or therapeutic purposes in adults, the application of 10 per cent solution of cocaine to the pharynx, base of the tongue, and larynx renders the patient quite tolerant of the instrumentation. This is also true of the removal of foreign bodies. It is well to give .016 of morphine sulphate hypodermically 20 minutes before the manipulation. This renders the patient less intolerable of cocaine and reduces the toxicity. It is always desirable to use no anesthetic in children up to 8 years. The determining factors whether ether is to be used will be the position, place, size, and nature of the foreign body. The author then reports in detail the 5 cases with results. All recovered rapidly after the foreign bodies were removed. C. A. LANG.

WENDEL, JACOB S.: ACUTE MASTOIDITIS, SINUS THROMBOSES AND BACTERIEMIA WITH RECOVERY—CASE REPORT. (Journal of the Michigan State Medical Society, February, 1919, p. 54.)

Wendel reports the case of a boy, 11 years of age, who developed an otitis media, followed by mastoid tenderness, chills, remittent pyemic fever and marked sepsis. The rapidity with which the infection extended, however, is rather unusual; within one week from the time the physician was called for ear-ache the lateral sinus and internal jugular vein were thrombosed. The temperature followed very closely the remittent pyemic course, which is usually described as typical of sinus involvement. It was characterized by sharp fluctuations, ranging from 98° to 104° in a few hours. The change was so sudden that it might have been overlooked if the temperature had not been taken every 2 hours. These sharp rises in temperature, which were probably coincident with the release of fresh emboli, were in some cases accompanied by chills. The first blood examination showed 9,560 white cells, with 85 per cent polymorphonuclears—a high polymorphonuclear count is the rule in these cases. The positive blood culture is an important diagnostic point, a negative culture, however, does not rule out sinus thrombosis, since it has been found that the blood culture may vary with the stage of thrombosis. In the early stage a positive culture is expected, later it may be negative and still later, when the thrombus begins to disintegrate, it usually becomes positive again. The child recovered quickly without metastatic foci, a common complication in sinus cases. On incising the sinus wall, it was found completely thrombosed with blood clot and pus. After exposing the sinus thoroughly, bleeding was secured from the proximal end, but probing toward the jugular bulb was unsuccessful. The internal jugular vein and collaterals were then ligated and about 2 inches resected. The proximal end of the vein was brought to the skin edges in order to irrigate through from the bulb at a later date if necessary. Wendel claims that having a thrombosed sinus from which free bleeding cannot be secured, with clinical symptoms of sepsis, the only logical procedure is to ligate the internal jugular vein. By doing this the entrance of the metastatic infective emboli into the general blood stream is prevented and the body is free to combat the infection already present.

C. A. LANG.

HARROP, GEORGE A., JR.: THE PRODUCTION OF TETANY BY THE INTRAVENOUS INFUSION OF SODA BICARBONATE. (Johns Hopkins Hospital Bulletin, March, 1919, p. 62.)

Harrop reports a case of a patient with tetany which was produced, or at least precipitated, by intravenous infusions of sodium bicarbonate. In this case, analysis of the calcium content of a blood serum sample, taken 20 hours after the original attack, showed a value higher than 9.0 m.g. per 100 c.c., hence about normal, and there was no marked accumulation of phosphates (the phosphate content of the blood serum was less than 6.0 m.g. per 100 c.c.). It should be noted, he claims, that in this case there had been no convulsions. The condition here was associated with, if not directly precipitated by, the suddenly increased alkalinity of the blood due to the sodium bicarbonate infusions. In conclusion he desires to call attention to a danger, not too remote, attendant upon the intravenous use of sodium bicarbonate in conditions in which the renal excretory function is markedly impaired, and particularly when extreme oliguria or anuria is present.

C. A. LANG.

BRADY, JULES M.: SPASMOPHILIA AND INFANTILE CONVULSIONS. (Journal of the Missouri State Medical Association, March, 1919, p. 78.)

Convulsions during the first few days of life according to Brady, are of quite different significance from those after the third month. These convulsions in the new-born are due almost always to birth injuries, usually meningeal hemorrhage. After 3 months of life, sphasmophilia is to be strongly suspected, remembering that the exciting cause, be it intestinal toxins or systemic intoxication, are not liable to bring out a convulsion unless the reflex centers in the spinal cord and the sensory and peripheral nerves are hyperexcitable. By means of electrical reactions these babies, with this convulsive tendency, can be picked out even when they appear in perfect health. The author states that innumerable normal infants have been tested out and, when the cathodal opening contraction takes place with a current less than 5 milliamperes, we can pronounce latent spasmophilia present. He states that the nerves of the newly born and of young children require more current to bring out a contraction than in later life, and that at about the fifth year there is very little difference. The cathodal closing contraction takes place in healthy children with a current less than 5 milliamperes. A contraction obtained with the positive pole on opening the current, if less than 5 milliamperes, is strongly indicative of spasmophilia, but for practical purposes we have found it sufficient to be guided by the results obtained with the negative pole. A normal infant will never show a contraction with a current less than 5 milliamperes on opening the cathode.

Breast-fed babies escape almost completely from this diathesis which affects a large percentage—from 30 to 50—of the artificially fed. The condition is a metabolic disturbance associated with a faulty balance of the calcium salts. Heredity plays an important rôle in the etiology and more cases are met with in the spring of the year. The fat and protein of cow's milk are believed not to favor the development of the condition, the odium being placed on the whey.

Tetany and laryngismus stridulus may show themselves in a child in place of general convulsions and are simply different manifestations of one and the same condition. The pathognomonic signs, the Trousseau and the Chvostek, are usually readily elicited. Rickets, which has been known so long to be closely associated with laryngismus stridulus and general convulsions, is found in a large number of these children because they are artificially fed and artificial feeding and rickets are closely associated. Furthermore, in both conditions there is this perverted calcium metabolism; for some strange reason the body juices of these infants can not hold on to calcium, and more of it leaves the body than can be absorbed. The blood of these infants shows, on examination, a deficiency in this important element. The convulsions having subsided as the result of antispasmodics, chloral, bromides, or even morphine, hypodermatically, the diathesis is altered by regulation of diet. Cow's milk is to be absolutely eliminated from the diet as it is the injurious agent, and in its stead cereals are administered. The length of time cow's milk is to be excluded will depend on the individual case. Two weeks is the longest time it is safe to depend on a vegetable protein; cow's milk then, in small doses, must be started. The ideal way to cure the constitutional anomaly is by the administration of breast milk. Patients past 8 or 9 months get along very well on vegetables and cereals, but in the younger infants, especially when the weight is subnormal, to succeed without breast milk is extremely difficult. Castor oil should be given at the outset, as free purgation alone diminishes the hyperexcitability; this is to be followed by water, oatmeal water, phosphorous and codliver oil 1 part to 10,000.

The author reports 4 cases with the treatment.

C. A. LANG.

SELLARDS, ANDREW WATSON, AND WENTWORTH, JOHN A.: INSUSCEPTIBILITY OF MONKEYS TO INOCULATION WITH BLOOD FROM MEASLES PATIENTS. (Johns Hopkins Hospital Bulletin, March, 1919, p. 57.)

Measles, though usually a mild disease in itself, often leads to serious consequences; its involvement of the upper respiratory tract frequently facilitates the invasion of the lungs by the hemolytic streptococcus or the pneumococcus. Control of these infections by specific vaccines or serum therapy is a difficult problem. Attempts are being made to prevent measles itself by the development of a prophylactic inoculation but unfortunately, the causative organism of the disease is not known. A variety of bacteria have been cultivated from the blood and the mucous exudate of patients suffering from measles but evidence of the etiologic importance of these organisms has not been produced. It has generally been considered that Hektoen by inoculations into man has established the existence of the virus of measles in the circulating blood at least during the first day after the rash appears. In attempting the attentuation of the virus of measles, one of the first points obviously consists in determining the susceptibility of lower animals. Important symptoms have been attributed to the inoculation of the blood of measles patients into monkeys. In a review of the literature Sellards and Wentworth found the following attributed to inoculating monkeys: (1) Fever, (2) Rash, (3) Koplik's spots, (4) Leucopenia, (5) Rhinitis, and (6) Malaise. As the results had not been very conclusive, the authors attempted the following experiments themselves. Three monkeys were inoculatd with the blood of measles patients taken early in the course of the disease from moderately severe cases. These animals remained entirely free from any symptoms that were either diagnostic or even suggestive of measles. Two of these animals that were injected a second time failed to develop any symptoms. After an incubation period of 11 days blood was taken from one of these monkeys and injected into a human being. No symptoms developed. The authors finally came to the following conclusions: That in the investigation of the circulating blood for the virus of measles, it would seem that truthworthy progress cannot be made by the inoculation of monkeys. Even though slight symptoms do develop in occasional individual animals, it would appear that the results are too inconstant and indefinite to permit the practical use of this animal. Some more accurate means for the diagnosis of measles must be obtained before it can be clearly established that the monkey is, at times, infected by the injection of blood from early cases. It is conceivable that infection of this species with measles might be obtained in some other manner; for example, by scarifying the mucous membranes with the virus using perhaps the secretions from the respiratory tract instead of the blood of patients.

C. A. Lang.

HUCK, JOHN G.: CHANGES IN THE BLOOD IMMEDIATELY FOLLOWING TRANSFUSION. (Johns Hopkins Hospital Bulletin, March, 1919, p. 63.)

The effect of transfusion was studied by Huck in 7 cases of pernicious anemia, 2 cases of idiopathic purpura, 4 of benzol poisoning, 5 of secondary anemia and 2 of Banti's disease. Transfusion was performed in each instance by a modification of the citrate method of Lewisohn, as described by Sydenstricker, Rivers and Mason. The amounts of blood given in different cases varied from 250 c.c. to 1,250 c.c. Studies of the blood were made immediately before the injection, immediately after the injection, 2 hours, 5 hours and about 24 hours later. Counts were always made with the same instruments and by the same observer, with the same reagents; and care was taken to draw the blood from the same part of the body, with uniform punctures.

In general, following the injection of blood, there was an immediate increase in the red cell count, the striking point being the marked increase in many cases apparently out of proportion to the quantity of blood introduced. Thus in one case the red count rose from 880,000 to 1,488,000 immediately after the injection of 500 c.c.; and in another case, from 480,000 to 1,300,000, following the injection of 650 c.c. Such remarkable changes indicate apparently a rapid redistribution of blood following an injection. In some cases the initial increase continued for several hours, usually falling, so that at the end of 24 hours the count had fallen to approximately where it was before transfusion. In other cases, however, there was marked increase at the end of 24 hours. In several instances, after injection of blood, the count fell for a few hours and then rose slightly. The hemoglobin in most cases showed a uniform rise following transfusion, usually reaching its maximum at the end of 24 hours. In some cases the hemoglobin fell slightly after the initial rise. Changes in hemoglobin did not run parallel with changes in the red count, as may be seen best from the variations in the color indices. The leucocytes in practically every case were increased. In several instances, however, they remained practically stationary or even fell. These relations do not seem to be constant in any particular type of case. The most striking change in the differential count is the increase in the polymorphonuclear neutrophiles, which was striking even in some cases where there was little change in the total leucocyte count—occasionally a neutrophilic myelocyte was seen but they were not constant. In these cases no outpouring of nucleated red cells occurred, although in 4 instances a few were seen following transfusion but not before. The numbers are so small, however, that this may have been accidental.

His conclusions are that the immediate effect of transfusion in these 20 cases does not reveal any constant changes following this procedure. The point of practical interest and importance seems to be that no exact mechanical effect can be demonstrated following the introduction of definite quantities of blood. Whereas, in a general way, it may be said that the introduction of blood raises the count, the effect is essentially a biological one involving the redistribution of blood in the body and its exact nature is not at present understood. C. A. Lang.

Farr, Robert Emmet: Local Anesthesia in Children. (Interstate Medical Journal, February, 1919, p. 83.)

For some years Farr has been testing the application of novocain in surgical work on children. The operations performed have included those upon the head, neck, limbs, external genitals, spine and abdomen. In all, 77 cases have been attempted with local anesthesia, and in only 7 of these was it considered necessary to add inhalation anesthesia. The author considers novocain as safe in the child as in the adult. The psychic element is not so important. To be sure the child may be frightened at his new surroundings, and all very young children have to be restrained by mechanical means, but the restraint necessary during the introduction of novocain does not compare with that ordinarily found necessary when general anesthesia is being administered. Many children above 4 years of age submit without mechanical restraint. Only one of this group suffered from postoperative vomiting which was a case of hypertrophic pyloric stenosis, and here vomiting was late and had no relation to the anesthesia itself.

In working upon children the same refined technic is required as that found necessary in operating upon the adult. Sharp dissection and careful traction and manipulation must be adhered to. Abdominal work requires anesthesia which results in negative intraabdominal pressure. Vertical retraction and tilting of the body are used to bring the organs into view. Just as in the adult, protrusion of the abdominal viscera through the incision is to be looked on as evidence of incomplete anesthesia if it occurs in the absence of vomiting or (in the case of children) crying. In the child one must guard against this protrusion in case the patient should begin crying. A sponge must be kept ready for this emergency, and, should it arise, used to prevent evisceration—not by packing gauze into the abdomen, but rather by plugging the opening temporarily. By applying towel forceps to the edges of the incision, the abdominal wall may be elevated gently and the abdominal contents examined visually to a degree seldom found possible under general anesthesia. The flaccid abdomen resulting from a perfect local anesthesia gives one a condition almost like that found at autopsy. The constant motion of the viscera, seen so commonly under general anesthesia, is almost entirely absent. This is especially true in the absence of distention or acute inflammation. In acute conditions, where abdominal distention is marked, narrow gauze packs can be inserted with slight inconvenience, provided the abdominal wall is anesthetized over a wide area, so that vertical retraction can be made without pain. Operative procedures must always be carried out in a manner which might be appropriately designated as stealthy. Failure may follow any overt act which violates the more or less clearly defined routine one must follow. This may necessitate the administering of a general anesthetic. In children most of the retraction may be done by automatic wire retractors or towels clamps which prevent slipping and thus eliminate many difficulties. Little benefit is obtained from preliminary hypnotics and they are probably unnecessary. In children complete infiltration is made before beginning the operation. It is necessary to avoid pain in making the infiltration. This is done by making all secondary wheals from beneath, and by making subdermal rather than intraderml injections for the anesthesia of the skin. The deeper infiltration is to be made slowly and methodically under a constant, even pressure. The fluid should advance into the tissue just ahead of the point of the needle. The area to be blocked should be saturated with novocain. If this is done, there is no margin of error as to obtaining anesthesia.

Farr considers that a large percentage of bad risks should have the benefit of local anesthesia as the margin of safety possessed by novocain is as great in children as in adults.

C. A. Lang.

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ORIGINAL COMMUNICATIONS

SOME POINTS RELATIVE TO THE TECHNIQUE OF LUMBAR PUNCTURE IN CHILDREN.*

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Lumbar puncture, properly performed, is such a simple operation in a child that at first thought it would seem unnecessary to deal with it in detail. Yet there is no doubt that many medical practitioners hesitate to perform the operation, especially when a patient is being treated at home, for fear of an unsuccessful result—the so-called "dry tap." There can be little question that this hesitancy in performing rachicentesis prevents in many instances a prompt diagnosis with the early application of the proper therapeutic measures. It is thus extremely important that a simple and easily carried out technique be applied. The principles of the operation as originally laid down by Quincke remain virtually the same, but the general text books are often rather meagre in the space devoted to the description of the technique, and one unfamiliar with it finds some difficulty in learning the minor details which are essential for the beginner to know, in order that he may pursue the proper method.

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In young children rachicentesis is a rather simple procedure, if certain principles are followed and the beginner quickly acquires proficiency. The difficulties increase in older children, in adolescence, and it remains somewhat more complicated in adult life.

During the epidemic of poliomyelitis a few years ago, a great many of the patients admitted to the Kingston Avenue Hospital were treated by lumbar puncture, almost 1,000 punctures being performed. Ample opportunity was thus afforded to employ various methods comparatively and to come to a definite conclusion as to the best technique to adopt.

Characteristics of lumbar vertebrae in children. In order to understand the principles upon which the various steps of the procedure are based, it is necessary to speak briefly of the anatomical structure of the lumbar vertebrae in childhood to which attention has been drawn in a previous presentation. The structure of a child's spine differs from that of an adult. At an early age the vertebrae are not distinct and separate bones, connected by ligamentous attachments, as they are later in life. They appear "en masse" partly cartilaginous and united into one piece from which the individual bones are separated only with difficulty. The line of cleavage and the degree of movability is more definite between the spinous processes than elsewhere. The laminæ are rather short and wide, and the interlamellar spaces are directed rather obliquely downwards and compared to adult life are quite narrow, further adding to the difficulties of the lateral route. At an early age the spinous processes are rudimentary and semicartilaginous in consistency. They are short, thick and rather quadrilateral in shape. The interspinous spaces are quite wide, especially when the body is well flexed. The supraspinous ligaments are relatively strong and are intimately blended with the cartilaginous tip of each spinous process.

Termination of the spinal cord. The termination of the spinal cord is lower, as a rule, in children than it is in adults. Thus, Quincke,[1] to whom the honor of first accurately describing lumbar puncture belongs, has made original studies on this point. He found the conus medullaris to extend as far as the second lumbar vertebrae in children of 3 years of age, and to the third lumbar vertebrae in some of those under 1 year.

The route for puncture. Two routes of puncture are employed, (1) the median, and (2) the lateral, in either case depending on whether the needle is introduced directly between the adjacent spinous processes, or laterally at a variable distance therefrom. With a few exceptions most authors are fairly uniform in their opinions that the median route is most advantageous for rachicentesis in children. Anyone who has performed a number of punctures using this route must certainly be impressed by its simplicity. The advantages of the median over the lateral route have also been spoken of in a previous presentation.[2] They may be summarized as follows: The median is a clearly defined procedure and it is quickly and easily learned by the novice. Dry taps are encountered less frequently. This can be readily understood because in lateral puncture the needle must be started at just a certain point and given a definite inclination inwards and upwards in order to penetrate the subarachnoid space in the median line. The chances of error in the direction given to the needle, either in that it may be directed too much inward, causing it to pass entirely beyond the subarachnoid space, or too much upward, causing it to impinge on the vertebral arch above, are obviously present in older children, even though much less apt to occur than in adults. The liability of injury to the nerve filaments of the cauda equina or the spinal blood vessels is less with the median route. The latter method also has the advantage of an exactly mesial puncture of the dura, without calculation, for the purposes of spinal anesthesia or serum injections. With the lateral route the needle more commonly strikes bone, thereby increasing the pain. Moreover, it is more apt to be plugged by the tissues traversed, there being more subcutaneous and muscular tissues to be penetrated in lateral puncture.

The reasons for the superiority of the median over the lateral route are also founded upon the anatomical structure of the parts in children. In young patients, when the back is well flexed, there is an amply wide interval between the adjacent spinal processes allowing the perpendicular introduction of the needle without any liability of striking the spine. After the skin is penetrated the depth of subcutaneous tissue is only slight and the supraspinous ligament is encountered almost immediately. This ligament offers a definite resistance to the progress of the needle, especially in infants and young children, and owing to the elasticity of the whole spine at an early age, a slight anterior bending of the ligament occurs before it is penetrated by the needle. The supraspinous ligament yielding, the instrument then passes almost instantaneously between the folds of the interspinous ligament, very little resistance being offered, and immediately after the dura is penetrated.

The direction of the insertion of the needle. Upon the anatomical shape of the spines and of the interspinous spaces in children, Quincke,[3] in his classic description, stated that the needle should be introduced directly forward perpendicular to the spine. Many authors—Gray,[4] Fischer,[5] Devraigne,[6] Spear,[7] etc.—consider that a slight inclination should be imparted to the needle.

Clinically the operation is very easy when the needle is inserted in a direction absolutely perpendicular to the spine in all younger patients, the back being well arched so as to increase the width of the interspinous spaces. The needle then encounters no bony obstruction and is passed into the subarachnoid space without difficulty. As a rule any upward inclination imparted to the instrument increases proportionately the dangers of not obtaining fluid. Occasionally in older children over 7 years, or in cases where, owing to rigidity, the back cannot be well flexed, it is necessary to give the needle a very slight upward inclination, making an angle of about 70 to 80 degrees with the spine. In cases of severe rigidity this latter exception to the general rule of a perpendicular puncture at 90 degrees must be kept in mind.

The reason for the usual simplicity of a perpendicular introduction of the needle is evident upon the examination of the structure of the lumbar spine at the post-mortem table. They are broad, quadrilateral shaped projections running in a direction perpendicular to the body of the vertebrae with a fairly straight even superior and inferior border having little inclination and without any downward projecting tubercles upon their summit. They, therefore, offer no obstruction to a perpendicular introduction of the needle at an angle of 90 degrees except in unusual cases.

The site for puncture. Most authorities agree that the proper site for puncture in children is the fourth lumbar interspinous space, because of the fact that the spinal cord may extend as low as the third lumber vertebrae in unusual instances. It has the advantage also, as Lusk[8] has pointed out, of being the space in which there is least liability of injuring the nerve roots of the cauda equina. Moreover, the subarachnoid reservoir is here of good depth, thereby diminishing the liability of a dry tap, and finally the interspinous interval is here the widest.

In some cases, it is necessary to puncture at a higher level. Certain conditions may more or less demand this. Thus, fluid may not be obtained in the fourth interspace or adhesions may prevent the required amount from being removed, or in cases where daily punctures are performed inflammation and infection of the tissues around the site of puncture may make it inadvisable to introduce the needle at the same level. Under such condition the third lumbar space may be selected with a fair degree of safety, provided the patient is not an infant. It is rarely necessary or advisable to go higher than this level, as the chances of injuring the cord are greatly increased. However, in exceptional instances, and unfortunately sometimes in young children suffering from epidemic meningitis, adhesions may prevent proper drainage at both the third and fourth lumbar spaces and it is necessary to puncture at the second in order to obtain the necessary amount of fluid and to inject the required quantity of serum. This is unusual, however, and punctures at a higher level than the third interspace should only be performed as a last resort.

Previous preparation. A few writers consider a cathartic should be given previous to the operation. This is rarely essential but it is useful and may well be utilized if the delay thereby necessitated is not a drawback.

Position of patient. If the patient is a small child and can be moved without undue pain, certainly the best place to perform the operation is upon a table, which is long and wide enough to accommodate the patient and high enough to allow for the comfort of the operator. A very low table is disadvantageous and interferes often materially with the operation. The table should stand about 3 feet from the ground. In older children, over 8 years, the operation can usually be successfully performed with the child lying on the edge of the bed.

The operator has his choice of 2 positions, the sitting or upright, and the recumbent or prone. We have never used the sitting posture either for children or adults. Its obvious disadvantages for the former class of patients is readily seen, as the child cannot be properly held. The operation is thus rendered more difficult and the needle is more readily broken by struggling. Moreover, there is the factor of pressure of the spinal fluid to be considered. It has been shown that in the sitting posture the fluid under normal tension flows out of the needle at the rate of 100 drops a minute, while in the recumbent posture at the rate of only 30 drops. Thus the readjustment of intracranial pressure is more gradually effected in the recumbent posture. In this connection also it is wise to recall Ossipow's[9] experiments in dogs, by which he demonstrated that the rapid removal of spinal fluid resulted not only in a hyperemia of the cortex and substance of the brain and cord, but also in small hemorrhages and, where the animals were allowed to live, in degeneration of the ganglion cells.

Therefore, there can be no question that the prone position is the one to be employed for lumbar puncture in children and adults, and must always be used when the operation is performed for therapeutic purposes, large quantities of spinal fluid being removed.

There is some difference of opinion as to whether the child should lie on the right or left side, the so-called right or left lateral prone positions. As shall be described further on in the text, the thumb is used as a guide for the introduction of the needle. It cannot be utilized in this way, if any other position than the left lateral prone be employed. The patient should therefore lie on the left side with the legs well drawn up and the neck and shoulders flexed as far forward as possible, causing as marked an extension of the back as can be accomplished. Flexion may be difficult and painful to the patient in some cases of meningitis in which the rigidity is marked, but every effort should be made to obtain it, as the operation is thereby greatly simplified. An assistant should be at hand to maintain the position by placing one arm over the neck and one arm under the knees, drawing the 2 parts together. The operator should see that the patient is held by an arm being placed over the neck, rather than under, because if the latter is used the child may suddenly turn over on its side and break the needle, further complicating the procedure. For the same reason it is not advisable for the person holding the patient to release his grasp, even for an instant.

In older children, over 6 years, one can often maintain very satisfactory flexion by means of a sheet, twisted into the form of a rope, placing it under the knees, and then by drawing the 2 ends upwards, flex the lower limbs on the abdomen; the free ends are then used to encircle the arms above the elbows, and are then drawn over the shoulders and tied in a knot. In many instances when the child is irrational or resists, this will prove of assistance in holding the child in the proper position. For young children it is, of course, unnecessary, as they can be held better without its aid.

After the needle is introduced and fluid obtained the extreme flexion can be somewhat relaxed especially if rigidity is marked or severe hyperesthesia or polyneuritis be present.

Anesthesia. General anesthesia. Some authorities advocate a general anesthetic in performing a lumbar puncture. In most instances chloroform is advised. Neal and DuBois[10], whose experience with lumbar puncture has been very extensive and whose opinion is therefore authoritive consider that a general anesthetic is dangerous. The writer has only rarely seen a child who was delirious and restless enough as to require a general anesthetic. It may safely be said that if someone is at hand, who can properly hold the patient, it can almost always be dispensed with. The pain accompanying the introduction of the needle is so transient and the time required to penetrate to the subarachnoid space is so small, if the operator is at all skillful, it seems scarcely justifiable to make use of an anesthetic which always adds an entirely unnecessary element of danger to the procedure, proportionate to the severity of the disease in which it is employed and to the condition of the patient by its effect upon the respiration, the heart and the blood pressure. It is, of course, impossible to use it where punctures are being performed daily, as in cases of epidemic meningitis. Even when violently delirious, a bed sheet arranged as previously described will as a rule, although not always, be sufficient to control the patient.

Local anesthesia. Various local anesthetics are advised by different writers. Some recommend a spray of ethyl chloride, others a superficial infiltration with cocaine or novocaine solution, and still others a "progressively deep infiltration with cocaine." (Rosenthal.) In our cases it has never seemed advisable to utilize any local anesthetic. In the first place it will be recalled that in children the subarachnoid space is relatively superficial, varying in depth from 14/16 of an inch to 1½ or 1¾ inches, depending on the age. For this reason, with the back well arched, the needle penetrates the dura almost immediately after it passes through the skin. The pain is very transient and it is open to much question how much the anesthesia of the skin prevents the pain of the operation. Ethyl chloride is particularly objectionable as a local anesthetic because it is painful if the patient's spine is at all hyperesthetic, and by hardening the skin over the point of puncture it interferes with the clearly defined sensation of touch which is so important in starting the introduction of the needle in the proper direction. In cases in which repeated punctures must be performed the use of cocaine, either superficially or deeply, is open to the decided disadvantage that it may inflame the tissues and thus open the way to infection, interfering seriously with subsequent treatment. Progressively deep infiltration with cocaine may be of use in adolescent or adult patients when only one puncture is to be performed.

As a rule therefore it may be said that anesthesia is not only unnecessary, but is undesirable in most cases. In older children the operation may sometimes be facilitated by the administration one hour previously of morphine and atropine in a dose proportionate to the age of the patient. In younger children this is entirely unnecessary.

The importance of sterility in technique. The literature lays little stress on this point. Porter[11] very appropriately states "the greatest danger (in lumbar puncture) is carelessness due to lack of asepsis." Certain it is that once accidental infection with a pus producing organism occurs the result is almost invariably fatal. That such cases occur more frequently than they are reported there can be little doubt. Considering the carelessness of the technique which is often used in rachicentesis it is a surprise that they are not more commonly encountered. The physician should not be led to be any the less cautious about his asepsis, because of the rarity of the accident.

The instruments should be boiled for at least 15 minutes, especially if they have been used just previously in a pus case.

The operator should thoroughly scrub his hands with soap and water and rinse them in a solution of 5% carbolic, or a 1-1000 bichloride, or use alcohol. He should make it a practice to always wear sterile rubber gloves.

Preparation of the site for puncture. Some writers consider it only necessary to paint the area with tincture of iodine. Others advise that a preliminary scrubbing with tincture of green soap and alcohol be used first. The latter method is by far the safest to follow in all cases especially in young children in whom the skin of the lower part of the back may become soiled by fecal discharges, and nothing is more conducive than this to infection of the worst type (colon bacillus.) The skin should be first thoroughly cleansed with green soap, alcohol is then applied; this is allowed to dry, and the surface is then painted with iodine. Where repeated punctures are being performed one must be careful not to use too concentrated an iodine solution, as in younger children the latter may act as a skin irritant causing superficial desquamation and subsequent liability of infection of the skin. The iodine is applied not only for its local antiseptic effect but also as an aid in locating the landmarks for the introduction of the needle.

This is best done by first drawing with a cotton swab an iodine line from the highest point of the iliac crest to the spine. This line intersects the spine at the fourth lumbar vertebrae. Around it the skin should be painted for a distance of 3 to 4 square inches, extending thus 3 to 4 inches above and below the line, and 3 to 4 inches external to the spinal column. This gives a sufficiently large sterile field, and moreover, it has the advantage of avoiding the necessity of the operator breaking his technique by having to locate the crest with his hand. After the iodine has been applied the field of operation should be draped off with sterile towels.

Method of holding and of introducing the needle. The operation is often greatly facilitated by the manner in which the needle is held and the way in which its introduction is started. The instrument should be held in such a manner as to provide it support in its introduction and at the same time to give the operator complete control over the insertion in order that he may at once feel any bony obstruction. This is best accomplished by holding it with the base against the palm of the hand, and the point between the thumb, index and middle fingers. In this way a firm grasp and an easily regulated force is afforded for pushing the instrument forward in a direction which can be easily controlled, thereby, not only reducing to a minimum the possibility of breaking the needle, but also preventing repeated poorly directed thrusts which increase the patient's pain, and add to the muscular contraction, rendering the operation more difficult of successful accomplishment. It follows, of course, that the needle used must be suitable for the purpose and hence should be long and of a sufficiently large calibre.

With the needle properly held in the right hand, the next point is its proper introduction. The desired interspinous space is located, the thumb of the left hand is placed deeply into the interspinous interval, so as to be just below the spine of the 4th lumbar vertebrae, the finger nail making a deep indenture just beneath the spine and the needle is then introduced alongside of and just below the thumb. Sophian[12] has recently described this method. This affords invaluable assistance in guiding the point of the needle properly as it is first introduced, preventing it from impinging on the spine of the vertebrae above and yet providing sufficient space so that the upper part of the spine of the vertebrae below is also avoided. It is useful for the operator to have the finger nail of the thumb of his left hand of good length so as to be able to make the indenture in the interspinous space as deeply as possible.

As previously remarked the thumb cannot be used in this way as a guide if the patient lies in any other than the left lateral prone position. Herein lies the superiority of the left over the right lateral prone position.

Incision of the skin is sometimes advised previous to the introduction of the needle. This is an entirely unnecessary aid, and is harmful in that it renders the site of puncture more painful, unnerves the patient, and should the operation have to be repeated it will be readily seen the method is impractical as it predisposes to inflammation, and infection is thereby rendered possible.

The rapidity and force to be used in introducing the needle. Some writers consider that firm gentle pressure should be used, others that a quick sudden thrust is preferable.

It would seem reasonable to suppose, that the use of speed in the introduction adds an element of danger to the operation as the needle may thereby be broken—this is more especially the case in adults—by its being driven suddenly against a bony structure. On the other hand, an unnecessary slowness adds pain and discomfort to the patient, and is therefore objectionable. Yet for an inexperienced operator it is better to proceed in that way rather than to risk the danger of a sudden thrust. The ideal method is to guide the needle carefully as it is passed through the skin, giving it the proper direction, and then this being attained, by gradual, firm and fairly quick pressure to push it forward, paying attention to resistances encountered, and always holding it so that the introduction may be interrupted at an instant should that be necessary. When the needle passes through the dural membrane there is, as a rule, the sense of disappearance of the obstruction, and this "giving way" sensation indicates that one is within the subarachnoid space, this latter supposition being confirmed when the stilette is removed and the cerebrospinal fluid issues from the needle. The beginner may have some difficulty in learning to recognize the moment when the needle pierces the dura. If he then continues to introduce it further, the posterior wall of the body of the vertebrae of the intervertebral discs will be encountered. The former resistance is as a rule so marked that it will not be easily mistaken, but the latter may not offer great obstruction and in very young children, to the surprise of the operator, a thick gelatinous material may ooze from the lumen of the needle, coming from the substance of the intervertebral discs. This has been noted by Merle[13] and others.

In order to prevent passing the needle too deeply and striking the body of the vertebrae or the disc, a rough idea of the distance to be traversed should be known. More important is this in the case of very young children in whom the bones are partly cartilaginous and readily injured by undue force. In children of one year or under, the subarachnoid space is very superficial, from 14/16 of an inch to 1 inch from the skin. The depth increases progressively proportionately to the age; at 6 years it is 1-7/16 of an inch, and at 10 years, about 1-12/16 of an inch.

Results of the introduction of the needle. Three things may occur; (1) the tap may be so-called "dry"; (2) pure blood may flow from the needle; (3) cerebrospinal fluid, either clear or mixed with blood, or pus may be obtained.

1. The so-called "dry tap." Literally this would mean a dry subarachnoid space but such a condition is of course impossible except when the ventricles are shut off by a closure of the foramina of communication between brain and cord due to tumors or purulent exudate, the latter being the most frequent. If this is the case, symptoms of an obstructive hydrocephalus are present. If there are no such signs then there must be fluid in the subarachnoid space and the lack of success in obtaining it is due to one of the following reasons: (a) The dura may be pushed before the needle, without the needle penetrating it, and in this way the 2 layers of the dura may be pinned to the body of the vertebrae without the subarachnoid space being entered. This will readily be recognized by the character of the obstruction (vertebral body) which is very firm and unyielding, and by the fact that the sensation of passing through the dura has not occurred. A slight withdrawal of the needle and its reintroduction will remedy this. It is not a common complication and usually occurs with a blunt needle. (b) The needle may be plugged by the tissues traversed. Thus a piece of muscular or fatty tissue or a blood clot may obstruct the lumen. This can readily be removed by the insertion of the stilette. (c) The needle may penetrate the posterior layer of the dura, traverse the subarachnoid sac and be driven into the body of the vertebrae. In this case either blood may ooze from the needle or no fluid may be obtained. In infants this is an extremely common occurrence. By withdrawing the needle slightly it will be free in the subarachnoid space and fluid will then be obtained. (d) Occasionally no fluid will be obtained although the needle lies within the subarachnoid space. This is due to the point being occluded by becoming entangled in some of the nerve roots of the cauda equina. It occurs only occasionally in children but is not uncommon in adults. To correct it the needle should be rotated several times, and if that is not effective either introduce or withdraw it a very minute distance. (e) In repeated punctures at the same level, adhesions are very apt to form and partially shut off the subarachnoid space, so that the fluid becomes sacculated. This is especially common in epidemic meningitis in adults. By withdrawing the needle sufficiently to reintroduce it in the same space, but very slightly more

laterally, the proper sac may then be punctured and plenty of fluid obtained. (f) Rarely the spinal fluid tension is very low, and it is necessary to raise it by coughing, crying, etc. before the flow can be started. In such instances care must be exercised in withdrawal to avoid the appearance of dangerous symptoms. (g) The spinal fluid in unusual cases of meningitis is so thick and purulent, that it will not flow through the lumen of an average sized needle. Under these conditions a small amount (5 or 8 c.c.) of the specific serum or some warm normal saline solution may be slowly injected under gravity so as to somewhat liquify the pus, and facilitate in its removal. This must always be done very carefully and only by one experienced in spinal work, as it is not without danger. (h) The needle may have passed outside of the limits of the subarachnoid space. This is, of course, well nigh impossible in children if the median route is used. (i) Very often an inexperienced and nervous operator fails to introduce the needle deep enough and removes the stilette before the dura has been penetrated. (j) Blood only may be obtained. This will be discussed below.

Thus in nearly all instances dry taps are not instances of a dry subarachnoid space but rather of some interfering factor which is capable of being remedied, and fluid can then flow out.

2. Pure blood may be obtained. Pure venous blood flowing from the needle may be obtained from the puncture of either the anterior or posterior venous arcades of the epidural veins. In children and infants the anterior epidural veins lying beneath the dura on the posterior surface of the lumbar vertebrae are probably most commonly the source of blood. That the anterior veins are more often the source of bleeding than the posterior may be well surmised because of the frequency with which the needle is introduced too far, striking the bony resistance of the body of the vertebrae, coincident with which, on removing the stilette, blood issues forth, and then by a slight withdrawal of the instrument spinal fluid either clear or bloody flows out. If pure blood continues to come from the needle, it is best to remove the instrument and make the puncture at a higher level. Death from spinal hemorrhage following lumbar puncture seems to be an exceedingly rare occurrence. A search of the literature fails to reveal any case report in which death could be attributed to this cause. Unnecessary traumatism should always, however, be avoided.

3. Cerebrospinal fluid may be obtained. This fluid may be clear or it may be blood stained or purulent. If clear it may flow from the needle very slowly or it may spurt from it with great pressure. In the former case the intracranial pressure may be low, or a nerve filiment may be occluding the point of the instrument. If the fluid spurts from the needle it is wise to reinsert the stillette just enough to regulate the flow, so that as the fluid is removed gradually, time will then be allowed for a gradual readjustment of intracranial pressure to occur. In diagnostic punctures the removal should be carried out slowly, especially if the tension is normal or below. If for any reason brain tumor is suspected, the withdrawal must be made drop by drop, to avoid the danger of sudden death, instances of which have occurred in such cases. When the spinal fluid is under hypertension, as in acute serous meningitis, poliomyelitis, etc. no untoward symptoms are apt to develop even if the removal is rather rapid, but this is no reason for carelessness and caution should always be exercised, stopping the flow now and then, to allow the intracranial pressure to adjust itself.

If the fluid is blood stained the source of the hemorrhage is subdural (Quincke.) It may be local bleeding, due to pricking of some of the veins of the cauda equina by the needle point, in which case a slight withdrawal or twisting of the needle in a circle, is usually sufficient to cause stoppage of the bleeding and to start a flow of clear fluid. At times it seems possible also that when the anterior epidural veins have been punctured, the needle being withdrawn slightly, the blood continues to ooze through the opening made in the dura, from the epidural to the subarachnoid space. No doubt this occurs mostly in infants and young children. A bloody fluid due to local traumatism at the time of puncture is not uniformly colored, which fact may be determined by collecting the fluid in separate tubes. Moreover it coagulates promptly. The spinal fluid may be bloody independent of the puncture, and in this case it will be uniformly colored. This may occur in various conditions, i. e. meningeal hemorrhage, birth traumas, fracture of skull, apoplexy, etc. If the hemorrhage has existed previous to puncture centrifuging the spinal fluid will not cause the blood to settle out leaving a clear watery supernatant fluid as it does in local hemorrhage. On the contrary the fluid will remain a yellowish color throughout.

The quantity of spinal fluid to be withdrawn. Upon this point there is a wide variance of opinion. There are a few factors to be considered which materially simplify the question. If fluid is to be removed for diagnostic purposes the removal of 8 to 10 c.c. is almost always sufficient, and if carried out gradually and in the recumbent position is devoid of all danger in children with a few exceptions. If the history of the patient and the physical signs point in the least to brain tumor, then it is wise to regulate the removal of fluid so it will be extremely gradual, in order that not more than 15 to 20 drops a minute will flow away, and never to remove more than 3 to 5 c.c. of fluid. The recumbent posture must be maintained for 48 hours post-operative, and it is a wise plan to elevate the foot of the bed. Then again in patients whose general condition is poor the strain of the operation may be sufficient to cause a fatality. This is not to be attributed to rachicentesis. Nevertheless, it is wise to avoid the operation, if possible, when the patient is moribund and if it is not expected that the removal of fluid will have any favorable effect upon the course of the disease.

For therapeutic purposes the quantity of spinal fluid removed is greater than for diagnostic reasons, and hence there is a greater element of danger, especially if the operation is not carried out in the recumbent position and the fluid removed gradually. If these precautions are adopted, however, large quantities may be withdrawn, in cases of acute hydrocephalus from various diseases, such as epidemic meningitis, acute poliomyelitis, tuberculous meningitis, and serous meningitis complicating the infectious diseases, as well as various other conditions, without the least unpleasant results. We have never seen a fatality following the withdrawal of large quantities, 20 to 40 or 60 c.c. of spinal fluid when hypertension due to acute diseases of this type existed if the usual precautions were followed.

As to when the withdrawal should be stopped, there are several factors to consider. One may allow the fluid to flow until it drops at the normal rate, a drop every other second, about 20 drops a minute or when the pressure is less until the flow is influenced by respiration. Or, if the amount removed is already large (50 to 60 c.c.) and fluid still continues to flow more rapidly than normal from the needle, and the patient complains of severe headache, the withdrawal may be stopped. The patient should always be watched as the operation proceeds, special attention being paid to the pulse, especially as to its volume and rapidity. The character of the respirations and the color of the skin and mucous membranes should also be observed. A pulse of poor volume, shallow respirations, and cyanosis are all symptoms of danger. In infants the condition of the fontanelle is an index of the intracranial pressure; while it is protruding or very tense, hypertension is still present in the subarachnoid space. As it becomes soft and depressed below the surrounding bone the intracranial pressure is gradually attaining the normal and if spinal fluid is not running out too rapidly and sufficient fluid has been obtained, the removal should be discontinued.

Various manometers have been used since Quincke's original invention for estimating the pressure of the spinal fluid. Unfortunately up to the present time, these instruments have given such diverse findings according to the type of manometer employed and have had so many disadvantages that they have not as yet come into general use. If a suitable practical instrument could be employed it would, undoubtedly prove of considerable assistance in determining the proper quantity of spinal fluid to be removed. Another and probably more reliable method of judging the condition of the patients is by blood pressure observations. But this requires a trained assistant and cannot be employed in very young children, nor in those who are extremely restless, and struggling. It is undoubtedly, a very good method, especially for adults and in cases in which serum is to be injected intraspinally following the removal of fluid. Sophian[12] is an ardent exponent of its value and has used it extensively as a guide in the intraspinal treatment with serum of cases of epidemic meningitis. The withdrawal of fluid has a fairly constant effect on the blood pressure, causing it to fall. The rate and extent of the drop in pressure are an index of the patient's condition and of the rapidity with which the fluid may be removed. Sophian considers a fall of 5 mm. in a child an indication to cease the removal of fluid.

We have utilized blood pressure observations in cases of poliomyelitis and epidemic meningitis, being treated by spinal puncture and the intrathecal injection of serum. They have proved of much help and should always be employed when possible for this purpose but they are by no means indispensable. For simple lumbar puncture, even when it is employed for therapeutic purposes, blood pressure observations are not in the least necessary to the successful termination of the operation. There fore, except in hospital work where facilities are available, both these procedures may well be omitted from the routine technique of a simple rachicentesis, at least by the beginner. Even for the routine administration of serum, blood pressure observations although very helpful to control the injection, are by no means essential.

Withdrawal of the needle. When sufficient fluid has been removed and the needle is to be withdrawn from the subarachnoid space, it should be carried out in such a way as to prevent oozing of cerebrospinal fluid along the tract of puncture, as frequently occurs. This is best attained by pressing the thumb deeply into the interspace, in a similar manner to what in which it is utilized on insertion of the needle, while at the same time the instrument is quickly withdrawn.

Post operative dressing. After the needle is removed it is a useful precaution to apply to the site of puncture some tincture of iodine. After this a sterile gauze or cotton pad held in place by adhesive strapping is preferable. Collodion is a good dressing if only one puncture is performed, but has distinct disadvantages when the operation is to be repeated, as the collodion is somewhat difficult to remove and the rubbing necessary to do so irritates the skin, and infection is more apt to occur.

Instruments required for the operation. It is necessary to have a lumbar puncture needle, 2 or 3 glass test tubes, a measuring glass, and if serum is to be given a receptacle for the serum. These instruments are best boiled in distilled water to avoid the precipitation of dirt from the tap water on the side of the test tubes, which interferes with microscopical examination.

The needle used for therepeutic purposes should be almost 10 cms. long and about 1.5 mm. in diameter, as advocated by Sophian. It should be of heavy steel or irido-platinum and fitted with a trocar, the end of which is beveled off so as to accurately fit the point of the instrument. The needle should be fairly sharp. For diagnostic purposes or for very young children, a needle of a smaller size and calibre may be utilized, thus a needle

7½ cms. long and 1mm. diameter or the smallest size Quincke needle may be utilized for diagnostic puncture in young children. But for therapeutic purposes and for older children it is essential to use a good sized needle, as it is less apt to be broken and fluid can be more readily obtained and serum given.

Accidental breaking of needle during puncture. This accident occurs occasionally and complicates the operation. If the broken end of the needle protrudes from the skin it should be removed. Or if it is felt right beneath the skin a small incision may be made and the fragment can then be grasped with a hemostat and drawn out. But if the needle cannot be located by palpation and is evidently buried deep, it is best left in situ for the time being as the lack of knowledge of the definite situation of the fragment makes the removal very difficult. Moreover, if subsequent punctures are required as in meningitis, the incision and the possible development of infection of the wound interferes materially with the treatment. Hence, the patient should have an x-ray taken and then when an operative procedure can be resorted to, without further complicating matters, this should be done, and the fragment will as a rule be readily found.

Treatment of collapse during operation. Jelliffe and White[14] advise the use of ether given hypodermatically, and after a response is obtained, they believé, strychnine, adrenalin and pituitary extract should be administered to prolong the stimulation. If the withdrawal of fluid seems to be the cause of the symptoms, some of the fluid or some serum may be allowed to flow back into the subarachnoid space. If this is not effective the operation should be terminated, and if the respirations are shallow or cease the patient must be given artificial respiration and as soon as the respiratory rhythm is reestablished, placed back in bed, external heat being applied and the foot of the bed elevated. Atropine, strychnine and adrenalin should be used in doses proportionate to the age. Such instances of collapse during the operation are extremely rare if proper precautions are followed and if the patient is not in poor condition when the puncture is started.

Post operative treatment. Only one thing must be considered here, namely, that the patient remain in bed for at least 24 hours after the puncture. This is a wise rule to carry out in all punctures whether diagnostic or therapeutic. It is extremely important that it be followed if the operation be performed for the purposes of treatment. In the latter case it is still better to confine the patient to recumbent position for 48 hours.

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THE HEART IN DIPHTHERIA (Archives des Maladies du Cœur, 1918, XI, 6). E. C. Aviragnet and his co-workers expatiate on the great interest of the arrhythmias in the course of diphtheria. They are not only of great variety, but they vary from moment to moment, and it is possible to trace in them the whole gamut of progressing and retrogressing disturbances in conduction of the impulse. Only polygraphic methods, with radioscopy, permit exact study of the phenomena induced by the toxic action on the heart. Anatomic examination alone is often misleading. This explains the conflicting testimony that has been published, some of which is analyzed here. The case is then described of a boy of 14 with diphtheria for eight days before antitoxin was given. Seventeen tracings of the heart action are given, showing toxic heart block and extrasystoles and their gradual retrogression, with a colored plate of the necropsy findings in the bundle of His. The boy succumbed the twenty-fifth day to weakness of the myocardium. The lesions in the myocardium were both interstitial and parenchymatous, but they were less pronounced in the bundle of His than elsewhere. Fatty degeneration of the liver was pronounced but the kidneys and suprarenals showed only slight changes.—*Jour. A. M. A.*

DENTAL INFECTIONS IN CHILDREN*

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In my work with children, my attention so often has been called to the neglect of peridental infections in these little patients, that 2 years ago I suggested to Dr. Ralph Ludwick, a dentist in Lincoln, that we make a special study of this condition. Up to the present time we have accumulated 109 cases, which will constitute the basis for this paper. A careful history has been kept of 88 cases, the others having been lost sight of, but since a recital of the physical condition of each would make this report too voluminous, it was decided, with the exception of a few case reports, to limit this paper to the bacteriology of these infections.

After looking over all the available medical literature we find that no one has reported upon the organisms present in dental infections of children. This report covers 109 cases of peridental infections. 4 secondary fistulas, 8 gingival abscesses, 1 abscess in the roof of the mouth and 1 infected submaxillary gland. The children's age ranged from 2½ to 11 years.

Technique. The affected tooth area was isolated from the rest of the mouth, was dried with alcohol and ether, and painted with one-half strength tincture of iodine. The root of the tooth, whether whole or partly absorbed, was touched with nothing but the sterile instruments used in innoculating the culture media. Cultures were made both aerobically and anaerobically and all colonies were later transplanted and grown on blood agar plates. The inoculated tube was examined each day and was not discarded before the sixth day of incubation at 37°C. Then it was placed before a window to assist in pigment development. Stained smears were made from the apical region of the tooth, also wet preparations were examined immediately so as to obtain data on the motility of the organisms.

The media used in these experiments were: Loeffler's blood serum, plain agar, litmus lactose and dextrose agar, ascitic agar, blood agar, beef bouillon, beef bouillon with hen hemoglobin.

All streptococci recovered. 48 in number, were injected intravenously into young rabbits to ascertain the pathogenicity and localizing power of each strain. The dose consisted of the organisms present in 5 c.c of dextrose bouillon incubated at 37°C. for 24 hours. These were washed in normal salt solution 2 times, put in 2 c.c. of the same solution, shaken 30 minutes and strained through 8 layers of fine gauze, (so no clumps were present) warmed and injected slowly into the marginal ear vein of the rabbit. The rabbit was killed and the autopsy performed when the animal seemed to be infected.

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*Read at the Annual Meeting of the Omaha Roentgen Ray Society, April 5, 1919

The scope of this paper does not extend to a consideration of the relationship existing between peridental infections and systemic diseases. The importance of the relation of oral foci to metastatic infections of the heart, kidneys, blood vessels, joints and other tissues, though overdrawn, is generally recognized. Of the organisms found in these infected areas, there are none having the varied possibilities for disease production as the streptococcus group. Clinical observations on adults, as well as animal inoculations, have clearly shown that in remote pathologic effects the streptococcus overshadows in importance all other organisms which may invade the human body.

A discussion of causative factors necessarily involves a consideration of its pathogenesis. We generally recognize that bacterial invasion is characteristic of the pus stage and is not necessarily present in all inflammatory conditions without pus at the root of a tooth, so our research series is based only on investigation of cases of the purulent type. Whether these organisms are carried to this region by the blood stream, through the lymph channels, through the gingival crevice, through the pulp chamber or from contiguous tissue is undecided, but we do know that other organs are affected through the blood and lymph streams by organisms from the tooth area. The bacterial invasion is no doubt aided by the formation of calcium deposits on the roots of the teeth or at the gingival margin, and by trauma, irritation and constitutional influences.

Special stress must be placed upon constitutional conditions, as scurvy, rachitis, improper feeding, that is, a largely carbohydrate diet, tuberculosis and syphilis, and infections in other body areas. So, as we all know, the interrelation between teeth and the rest of the body must be carefully considered and not one part studied, as is often done, without a thorough examination of every other system. Following this idea, I do not venture an opinion upon any chronic condition, whether teeth infections or abnormalities in other organs of the body, without a complete examination, both physical and laboratory by myself and assistants; without the opinion of the dentist, the eye, ear, nose and throat specialist, the roentgenologist, and the surgeon, if it seems necessary. Even with all these I often feel as if our knowledge is sorely limited. I wish to make it clear then that any care of the teeth, without taking the other organs of the body into consideration, is, in my opinion, of little permanent value.

The following is a table of the organisms and their number, found in the 109 cases of peridental infections:—

1.	Streptococcus hemolyticus	27
2.	Streptococcus pyogenes	19
3.	Streptococcus viridans	2
4.	Staphylococcus pyogenes citreus	9
5.	Staphylococcus pyogenes aureus	37
6.	Staphylococcus pyogenes albus	7
7.	Bacillus pyocyaneous	1
8.	Diplococcus pneumoniae	18
9.	Micrococcus catarrhalis	4
10.	Bacillus fusiformis, (Vincent's angina) (Spirochete Vincenti)	1
11.	Diphtheroid bacillus	3
12.	Sterile	8

All streptococci were injected into rabbits, as before described, with the hope of finding that they might have a selective action upon the dental tissues, but in no case was this found to be true. From the 48 rabbits injected, the kidneys showed multiple abscesses 5 times, the cardiac muscle once, the brain tissue once, and the joints 4 times. In each case the streptococcus was recovered. So in this series of 48 there were 11 metastatic infections causing pathological lesions far removed from the original focus. This is such a high percentage that these dental infections in children cannot be lightly regarded.

The history of 1 case seems especially interesting. The parents called me to see a child 2½ years of age, saying that it could hardly talk or swallow and had a high fever. A reputable dentist had seen the case 4 days before and had said that the child had an "abscessed tooth," but it would be all right and that he would extract the tooth when the proper time came. The examination showed a reddened edematous area about one of the upper molars, a large fluctuating tumor in the roof of the mouth and large pustular tonsils. An incision was made in the tumor on the lingual side of the molar, from which pus flowed freely. When the tumor in the roof of the mouth was incised, the pus, (at least 15 c.c.) fairly shot out of it. A gauze pack was inserted and it drained for several days. The tonsils gradually decreased in size and have not been infected since—7 months. The staphylococcus pyogenes aureus was isolated from each lesion. This seems to me to be a clear cut case of a secondary infection in the tonsil and we have seen 5 other cases of as convincingly secondary tonsillar infections from "teeth abscesses." This, in my opinion, proves clinically what Henke[1] has shown experimentally. He has injected solid particles in suspension into the mucous membrane covering the alveolus of the upper jaw. As a result of numerous carefully conducted experiments he was able to satisfy himself that there exists a constant lymph current passing from the gingival area to the tonsils and through it to its free surface.

So while dentists, as a rule, in my experience, do not like to spend the time necessary to properly care for the teeth of small children, I have insisted that these infections, as well as others, in the aural, nasal and oral cavities, be eradicated before tonsillar enucleation is resorted to; then if the tonsil infection does not permanently disappear, tonsillectomy can be done.

Another case of special interest is that of a girl 9 years of age. Past history is negative except for a few suspected infections of the tonsil for which a tonsillectomy was done 3 years ago. Four weeks ago the mother noticed the child had some fever, and then a submaxillary gland became enlarged. The primary cause was suspected to be about 2 lower molar teeth, the gums around which were much inflamed and swollen. Roentgenograms showed an absorption of the roots of these 2 teeth, and an area which was interpreted by the dentist to be an infected focus about the absorbed root of each. These were extracted, the pus was liberated and the area sterilized as could best be done. The submaxillary gland underwent liquefaction and required incising and draining. This healed in a few days. Unfortunately no cultures were made from the infected material, so the organism responsible was not identified. With the exception of the enlarged gland and the infected dental region the physical examination at that time was negative. Six days ago or 22 days after observing the original infection, the mother asked me to see the child, saying that the girl had a fever and that she seemed not to recuperate as rapidly as she should. An examination showed the wounds were entirely healed and seemed to be normal. Eyes, ears, nose and throat were negative. No tonsillar tissue present. Neck was negative and the lungs were normal. A flabby wave passed over the whole precordium synchronously with each contraction of the heart. The heart dullness extended from the right of the sternum to 2 cm. to the left of the midclavicular line. The heart rate was 122 per minute and the rhythm was slightly irregular. A systolic murmur, which was transmitted from the apex to the axillary origin and along the left of the sternum, was easily heard.

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[1] Henke, F. Arch. f. Laryngol, 1914.

The abdomen and extremities were negative. The catheterized urine showed albumen, ¼ per cent. (Esbach), acetone, pus cells, erythrocytes, pus celled casts, and the streptococcus pyogenes was isolated in pure culture. The same organism was found in the blood culture. White blood count was 16,400 with polymorphonuclear leucocytes 72 per cent. Rabbits have been inoculated with this bacterium, but it is too early to report the results. The Wasserman and complement fixation test for tuberculosis and gonorrehea were negative. The von Pirquet was negative. So, with the absence of any other discoverable focus, it seems reasonable to believe that the cardiac and kidney lesions, in this case, were in all probability directly due to the peridental infection.

The lessons which we have learned from this work are:

1. On account of the time-consuming difficulty in handling children, the teeth of these little patients are too often neglected by the parent, dentist and physician.

2. Too much attention is paid by the physician to the tonsil alone and little to the often primary focus around the teeth.

3. While this series is small it opens the way for a great deal of experimental work which will undoubtedly be of clinical value.

4. Children's teeth, infected as these are, must be extracted, if the focus cannot otherwise be sterilized, and this rarely can be accomplished. Though many dentists are of the opinion that premature extraction of deciduous teeth may result in the retardation of the development of the dental arch and be the indirect

cause of malocclusion of the permanent teeth, I am of the firm opinion that these infected areas, as well as those in other parts of the body, must be eradicated.

5. While this may be one of the causes of malocclusion, it is a lesser evil than the constant absorption of infected material from the peridental area, which may be the etiological factor in embolic diseases of other organs of the body, as shown experimentally in this series by the high percentage of this type of infection.

6. Teeth must not be considered as an organ apart from the rest of the body, for only by considering the whole human system can permanent results be obtained. When this is thoroughly appreciated, then and then only, can dental infections, their causes and results, be successfully treated in children.

7. The pediatrist, the laboratory technician, the roentgenologist, the dentist, and others specializing in different body areas must not work alone with the hope of eradicating disease, but only by the closest co-operation can successful results be obtained.

PHENOL EXCRETION IN THE URINE OF INFANTS, INCLUDING THE NEW-BORN (Amer. Jour. Dis. Child., 1917, xiii, 15). C. U. Moore finds that an increase in the number of stools per day is associated with a decrease in the total phenol output. In the writer's series of 15 infants the phenol excretion per kilogram of body weight was less in the breast-fed than in the artificially fed infant. In infants and in adults, so far as it is possible to determine from the limited number of cases now at hand, there is an interrelation between the total phenol excretion and the protein intake as measured by the total nitrogen excreted in the urine. This relation can be expressed in the general term, *trebling the protein intake doubles the phenol excretion.* Contrary to the earlier findings, phenol is quantitatively present in the urine of every new-born infant, the average of these 19 cases being 11.2 mg. for the first three days of life. As phenol is present during this period of starvation, it must originate in part through endogenous metabolism.—*The American Journal of Obstetrics.*

DIAGNOSIS OF CONGENITAL HYPERTROPHIC PYLORIC STENOSIS AND PYLORO-SPASM*

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The diagnosis of these two conditions, both of which present symptoms more or less definite and characteristic, is not always easy for one who practices among children only. For the general practitioner it is sometimes exceedingly difficult and the object of this communication is to help to clear up some of these difficulties.

Pyloric stenosis is a congenital condition characterized by hypertrophy of the muscular fibres of the pylorus, particularly the circular fibres, accompanied by vomiting, constipation and loss of weight and showing definite pathologic anatomy.

Spasm of the pylorus is quite a different condition, although the symptoms may often be most difficult to distinguish. The one thing that I wish to call particular attention to in this paper is the *value of a careful case history.*

The etiology of pyloric stenosis is, at present, unknown. Theories have been offered and the most likely one is that suggested by Dunn and Howell. They regard pyloric stenosis as a developmental abnormality, and to me this seems by far the most reasonable of the many arguments offered.

Practically all of the cases of stenosis that I have seen and studied have been in infants under 2 months of age. Unless diagnosed and treated surgically, they rarely live this long. Boy babies are more often affected than girl babies and breast fed babies about as often as artificially fed babies.

The general practitioner who will take a careful case history and who will make repeated observations of the patient during and directly after feedings, will often be surprised at the constancy of the symptoms and the ease with which a diagnosis may be made. The history of the case should consider the age of the patient, the temperament of the parents, the nature of the feedings, when vomiting first appeared, whether the vomiting was collective or projectile (explosive,) its relation to the feeding time, the character and size of the stools, the loss in weight and whether diarrhea or constipation be present.

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*To be read before the Pinal County Medical Society, June, 1919.

After the history has been taken and studied a careful examination of the infant should be made. Always strip the patient before making the examination. This is just as necessary as the "scrubbing up" steps taken by the surgeon before he considers touching the operative field. If the general practitioner were to make this a habit he would no doubt see fewer cases in a day but his percentage would be increased considerably.

Inspection during feeding is the first observation to be made. Repeated observations may be necessary. The infant should be watched for signs of distress or discomfort, gastric distention, gastric peristalsis and the area over which the peristalsis is visible. This will give a very accurate idea as to the size of the stomach. Palpate the stomach when active and when empty and the abdomen relaxed to determine the presence of a tumor. At times it is necessary to etherize the patient before sufficient relaxation for a thorough examination can be had.

Palpation of a tumor is the most positive evidence in favor of a stenosis and in practically all cases of complete stenosis. A tumor can be felt through the relaxed belly wall. The situation of the tumor is not constant but it is usually a little to the right of the median line and about midway between the tip of the ensiform and the umbilicus (Dunn.)

The tumor is usually about the size of a half grown olive and feels hard and smooth. My own investigations have led me to believe that the best time to examine and palpate for a tumor is directly after the infant has vomited. If the condition is not one of stenosis but, rather, pyloro-spasm, the pylorus can be felt to slowly, and more or less spasmodically, relax until there is no more tumor felt. The next best time to palpate is before a feeding when the stomach is empty. I have never been able to palpate a tumor, even when I knew it was there, when the stomach was full.

Delayed emptying time of the stomach, is, of course, significant. This should be studied and ascertained by roentgenograms taken after a test meal or by aspiration of the stomach contents at various times after a feeding. If roentgenograms are to be studied 3 plates should be made. The first directly after a bismuth meal has been given; the second at the end of two and a half hours, and the third at the expiration of three and one half hours. In a normal infant, with a dilute milk or whey as the basis of the bismuth meal, the first plate will show the passage of some food through the pylorus into the duodenum. The next plate, taken at the end of two and one half hours will show either an empty stomach or a very little of the bismuth in the stomach. The third plate taken after three and one half hours should show the stomach empty.

If the case is one of complete stenosis the test meal will remain in the stomach until vomited and none of the plates will show any passage of bismuth into the duodenum. In partial obstruction the first plate will show a very small amount of the bismuth in the duodenum and the second plate will show the passage of a little more. The third plate will show the greater part of the meal still in the stomach. (Dunn.)

Such a series of plates are interesting. They give valuable data as to whether the stenosis is partial or complete and also furnish a permanent record of the delayed emptying time. Aspiration of the stomach contents requires special apparatus and much more time and for the busy general practitioner, who is able to secure roentgenograms, is less satisfactory.

Pyloric spasm, while presenting symptoms very similar to stenosis, differs in many ways. The only truly scientific distinction is based on pathologic anatomy, spasm of the pylorus showing no abnormal condition of the pyloric musculature.

Etiology. This is still a matter of uncertainty. Nervous hyper-irritability, hyperacidity of the gastric contents and mechanical irritation from indigestion are the principal factors. It is a matter of record that the children of neurotic parents are most frequently affected. Personal observation has convinced me that faulty feeding which predisposes to indigestion will, in an infant of nervous parents, frequently give symptoms consistent with pyloro-spasm. A point to be remembered is that spasm of the pylorus is seen very much more frequently in artificially fed than in breast fed infants, and projectile vomiting in an artificially fed infant should always suggest spasm. The vomiting may be mild at first and later become severe and projectile. It may appear during the first week or several weeks later, and the vomitus may or may not show evidence of indigestion.

In severe cases constipation is always present and visible peristalsis is not uncommon. In some instances what appears to be a tumor may be felt, but it is smaller and thinner than the tumor of a real stenosis. Roentgenograms show the same delay in the emptying time of the stomach as is seen in stenosis but never complete occlusion.

The following case histories may be instructive because they are typical of most cases:

CASE I. Ramon C., fourth child of healthy Mexican parents, born very shortly before term after a long non-instrumental labor. At birth he appeared normal, weighed 6 pounds and 14 ounces, and was lively. The mother was a large, well developed woman and had an abundance of milk. The case was cared for by a public health nurse, and nursing at regular intervals of 3 hours was carried out. Two days after birth the infant vomited while at the breast. This was observed by the nurse and the attending physician was informed. From that time on the infant vomited some of each feeding, frequently all of it. From the first the vomiting was explosive. The attending physician felt that the infant was getting too much at a feeding and cut the feedings to every 2 hours. The vomiting was, if anything, worse. At the end of 8 days the infant had lost 4 ounces and was still vomiting. He was then taken from the breast and fed every hour, one and a half ounces of plain boiled water, one teaspoonful of lime water and one half teaspoonful of cane sugar. This was vomited as was the breast milk. He was then given whey and this was vomited about as soon as it entered the stomach. On two different days two feedings were retained and vomited at once and the vomiting was described as projectile. He had been constipated from birth and at the end of 10 days the stools were very small and meconium-like. He seemed hungry for his feedings, took them greedily, and always cried after vomiting. At times he cried as though in pain. He was seen in consultation when 18 days old. At this time he weighed 6 pounds and 3 ounces.

Physical Examination. He was a well developed but poorly nourished olive colored infant. The anterior fontanelle was open 2 by 2¼ c.m. and was slightly sunken. Posterior fontanelle slightly open. Nothing else remarkable about the head. Heart and lungs were normal. The liver was palpable 1¼ c.m. below the costal border in the nipple line. The spleen was also palpable at the costal border. The abdomen was slightly distended, presumably with gas. An irrigation was given and a half hour later the level of the abdomen was somewhat below that of the thorax. Two ounces of boiled water was offered. The infant took it greedily and while being placed on the bed vomited it all, or nearly all, in one gush. Immediately after vomiting a tumor could be distinctly felt. It was about the size of a large hickory nut. A second feeding was offered and the infant took it. He vomited it all as soon as the nipple was taken from his mouth. The tumor was again distinctly felt.

While the infant was taking the water the stomach was watched carefully. After one ounce had been taken the stomach could be outlined, and after two ounces had been taken the stomach reached to within about 1 c.m. of the umbilicus and peristaltic waves were seen running from left to right.

Diagnosis. With a history such as we have in this case the only conditions to be seriously considered are stenosis, spasm, and chronic indigestion. The fact that the infant was breast fed for a week, during which time he vomited practically all food, is in favor of stenosis rather than spasm. The palpation of a tumor is, furthermore, a point in favor of stenosis. The visible peristalsis, enlargement of the stomach and palpation of the tumor both before and after vomiting warrants a positive diagnosis of hypertrophic pyloric stenosis. Chronic indigestion in a breast fed infant of less than 3 weeks of age is so rare that it need not be considered.

Prognosis. The gravity of the condition was explained to the parents and immediate operation advised. They were told that unless operated at once the child would certainly die and that if operated he had an excellent chance to recover. Operation was denied. The diagnosis was confirmed at autopsy.

CASE II. Rowena T., born at term after normal labor and weighed 6 pounds. Nursed at the breast on the second day and took her food well. On the fifth day she vomited shortly after her first morning feeding, cried for 10 or 15 minutes as though in pain and then went to sleep. The ten o'clock feeding was given and again she vomited. This time she cried for nearly an hour. The breast was offered and she took the nipple hungrily, only to vomit her food a few minutes later. The attending physician was called and the infant was put on Eagle brand condensed milk and lime water. This was also vomited but not so soon after feedings, and the infant did not cry after vomiting. The bowels were very constipated and suppositories were used daily. At times they were effectual but usually an irrigation was necessary. The returns were usually small and frequently only enough to stain the napkin. The infant was, on the eleventh day, given a mixture of barley water and whey. This seemed to satisfy her but she vomited more or less of it. When seen in consultation the infant was 22 days old, weighed 5 pounds 9 ounces and was vomiting after all feedings.

Physical Examination. A small well developed but poorly nourished female infant of about 3 weeks. The skin was dry and there was noticed a slight rash, particularly over the chest and back. The anus was fissured and there were mucous patches in the mouth. The epitrochlear glands were noticeably enlarged. The anterior fontanelle was level and was open 2½ by 3¼ c.m. The posterior fontanelle was closed. Heart and lungs appeared normal. The chest was well shaped but there was no subcutaneous fat. The liver was palpable two finger breadths below the costal border in the nipple line. The spleen was not felt. The level of the abdomen was below that of the thorax and it appeared normal except for very slight rigidity of the recti. The extremities were normal in contour but emaciated. Kernig's sign was absent and there was no paralysis. The knee jerks were active and equal. There was some slight rigidity of the extensor muscles.

A feeding of water and barley was offered and it was taken rapidly. After an ounce and a half had been taken the stomach could be outlined but no visible peristalisis was seen. When 2 ounces had been taken the stomach could be picked up between the fingers easily. It felt hard and in the region of the pylorus a mass was felt that might have been taken for a tumor. It was, however, not a tumor but the pylorus contracted and hardened until it felt decidedly different from the remainder of the stomach. While being examined the infant vomited several times and the mass could be felt to gradually disappear. The relaxation of the pylorus could be felt very distinctly. Two more feedings were given and the same contraction of the pyloric musculature was observed. Both during and after each vomiting the infant appeared to be in great pain.

Diagnosis. In spite of the slight muscular rigidity noted, it is obvious that the condition is purely a local one. The physical examination, taken with the clean cut history, enables us to rule out a cerebral irritation. The parents denied having had a venereal disease but blood was taken from the superior longitudinal sinus of the infant and returned a three plus reaction. Chronic gastric indigestion in a breast fed infant is rare. The pain during and after the feedings and vomiting, the projectile vomiting and the palpable mass enable us to rule out this possibility. We have either a stenosis or a marked spasm of the pylorus.

The infant has been breast fed from birth with the exception of a few feedings. This is a point in favor of stenosis. The definite symptoms of pain *during* and *after* vomiting is, however, more in favor of spasm.

The palpation of a mass that could be felt to gradually and completely disappear after emptying of the stomach is, perhaps, the strongest point in favor of spasm. This rarely, if ever, occurs in stenosis. The loss in weight, projectile vomiting and constipation is characteristic of several conditions and is, therefore, no help in making a differential diagnosis. We are dealing then with a case of *spasm of the pylorus* and the infant has in all probability, congenital lues as well.

Prognosis. The general condition of the infant is only fair. If she is taken from the breast and given suitable food her chances are good. She should certainly be given the benefit of specific treatment.

CONCLUSIONS

1. Stenosis and spasm of the pylorus are relatively common among infants.
2. The general practitioner should be able to recognize these conditions.
3. A careful case history will usually make the diagnosis easy.

MISCELLANY

THE SUBCUTANEOUS AND INTRAVENOUS ADMINISTRATION OF SOLUTIONS OF GLUCOSE*

The injection, intravenous or subcutaneous, of normal saline solution, however useful in suitable cases, is apt to prove injurious in others, as, for instance, in presence of chloride retention, when the introduction of more salt may determine acute edema of the lungs or ascites and anasarca. From this point of view the substitution of glucose for saline solutions has effected a distinct progress in therapeutics, because glucose solutions are free from any injurious action on the kidneys, apart from which they are diuretic and nutritive.

The diuretic action is well marked. Negligible when the solution is administered by the mouth, this diuretic action is very pronounced when given subcutaneously or by the veins. It is much more marked than that of saline solutions. Hypertonic solutions of glucose are much more actively diuretic than the isotonic solutions, but require to be administered exclusively by the intravenous method, because, if injected beneath the skin, they determine great pain with local edema. By the injection of 1,100 c.c. of a 30 per 1,000 solution Fleig obtained diuresis amounting to four litres in the 24 hours. The cardiotonic action to which Dr. Enriquez called attention is open to question and in any case the injection, by raising the blood pressure, increases the burden thrown upon the heart. It is further to be remarked that the red corpuscles show no sign of deterioration under its influence.

Contraindications.—Glucose solutions are less injurious than saline solutions, since they do not aggravate chloride retention, but they are, of course, open to the same objection as any sort of solution, viz., that they provoke a sudden rise of the blood pressure. In arteriosclerotic and nephritic subjects the solution may determine the disturbances associated with hypertension, edema of the lung, etc. Prudence is therefore called for in respect of subjects whose myocardium is open to suspicion, in the subjects of high blood pressure, and in cases of Bright's disease with vascular lesions.

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*By G. Lyon, M.D., of the Faculty of Medicine of Bordeaux. From The Medical Press, London, March 5, 1919.

A rise of temperature has occasionally been noted after the injection of glucose solutions, as, for that matter, after that of normal saline. This has been ascribed to impurities in the distilled water employed, just as this explanation has been invoked to explain certain disturbances following the injection of solutions of "606," etc. This explanation is open to question, and it seems much more likely to be due to the presence in these subjects of latent tuberculosis lesions, for, as we know, tuberculosis subjects are particularly sensitive to injections of this kind.

Glucose is the carbohydrate mostly made use of for this purpose. It is employed in isotonic and in hypertonic solution. Fleig suggested the use of complex solutions in which such drugs as theobromin, caffeine, bromide of sodium, etc., are mixed with the glucose solution. I may add that the addition of adrenalin to both saline and glucose solutions is daily becoming more popular.

Much on the same lines is the injection of whey, suggested by Dr. Gimbert, of Cannes. Whey contains from 80 to 85 per thousand of lactose, 2 gr. 50 to 2 gr. 90 of chloride of sodium, and from 0 gr. 60 to 1 gr. of phosphates, etc., but sundry drawbacks have prevented its being used much for this purpose.

Isotonic and hypertonic glucose solutions have each their own special indications. The former are particularly indicated when we wish to wash the blood to secure the removal of toxins, the latter when we wish to bring about instant dehydration by setting up copious diuresis.

Isotonic solutions are reserved for subcutaneous administration and hypertonic injections solutions for intravenous injection. When the latter method is adopted we must be careful to inject very slowly—not more than 250 or 300 c.c. in the hour.

The employment of glucose solutions is not limited to subcutaneous and intravenous injection. As suggested by Murphy they may be injected *per rectum* (proctolysis) and this method has much to recommend it owing to its simplicity of application. It was the intrarectal injection of glucose solution plus adrenalin employed half an hour after the onset of the symptoms, that I am disposed to attribute the survival of a lad suddenly attacked by hypertoxic appendicitis with black vomit, collapsus apparently ushering in a fatal termination.

However administered the average dose is from 250 to 500 c.c. If intravenous, the latter quantity must be given at two sittings. For children the dose would be between 50 and 100 c.c. according to age. There is no particular limit in respect of the amount for rectal administration especially as part of it is certain to be wasted.

It remains for us to define the indications for glucose injections. These indications are in great measure the same as for saline solutions in general, but the special indication is as a substitue for saline solutions whenever the latter may prove injurious as in cases of chloride retention. Glucose injections are nutritive and are moreover extremely diuretic in their action.

Glucose injections are particularly recommendable in cases of acute and chronic enteritis in infants in whom denutrition proceeds so rapidly; in athrepsia, in the cyclic vomiting of infancy, in acetonuria, in the incoercible vomiting of pregnancy and in all cases of inanition caused by an affection of the digestive tract; cancer, stricture of the pylorus, chronic ulcer, etc. Also in severe neurasthenia with inadequate alimentation.

The diuretic action is in special request in many cases of anuria or oliguria due to hydropiginous nephritis. In such cases we may employ the glucose solution to which theobromine has been added provided there be no renal lesions or signs of advanced arterio-sclerosis in which the consequent sudden rise of the blood pressure might be fraught with peril.

Lastly, the disintoxicant and sthenic action is of service in most cases of severe toxinfections such as appendicitis, bronchopneumonia, typhoid fever, severe protracted operations, to give intrarectal in the form of hypertonic solutions suggested by Fleig that immediate beneficial effects can be obtained.

These injections have further been employed in intoxications, especially in carbon monoxide and chloroform intoxication. They might also be made use of in the treatment of the effects of the inhalation of asphyxiating gases, but in small doses on account of the pulmonary edema that is always to be apprehended in such cases.

The preventive administration of glucose solutions is indicated in anticipation of major abdominal operations (gastro enterostomy and the like). An excellent measure to which recourse is had by various distinguished surgeons is, in the course of severe protracted operations, to give intrarectal injections of glucose solutions with adrenalin (x drops). By this means we are enabled not only to guard the patient against chloroformic accidents but also against post operative shock.

Good results have been obtained in eclampsia. It would conceivably be interesting to try the glucobromide solution in epilepsy though the advisability of employment of these mixed solutions appears to me to be open to question.

CHRONIC PANCREATITIS. (Jour. A. M. A., Sept. 7, 1918). The effect of prolonged bile drainage in the cure of subacute and chronic pancreatitis is considered by Edward Archibald. The object of his investigation was to discover, if possible, the effect of bile drainage on that swelling of the pancreas, that we loosely call pancreatitis. During an operation for gallstones, examination reveals thickening and hardening of the pancreas. The gallstones are removed, bile drainage instituted, and the pancreatitis is left to get well of itself. Recently Dr. Judd said that cholecystectomy is better than drainage for curing the condition. Out of a total of 500 case records of operations on the bile passages Archibald found that the pancreas in 105 was enlarged, hard and nodular. Thirty-three of these cases were available as to the effect of bile drainage. In only four was cholecy stectomy performed, three of whom are well, but in one case the abdomen was closed without drainage and the patient reports himself unimproved. The advantages of drainage, the author thinks, are still apparent, and while he believes Dr. Judd's view is correct, he thinks the facts may be preferably explained as follows: that the removal of the gallbladder possibly brings about a permanent reduction of bile pressure by removing the only muscular force of any amount. While the bile pressure, as secreted in the liver, is 150 mm. of water, the gallbladder possesses an expelling force of 200 mm. This factor being removed by cholecystectomy, the pressure in the common duct rarely rises to a point at which it may be forced into the pancreas against the slight pressure of the pancreatic secretion, before the sphincter relaxes at the call of food and the bile in the common duct flows harmlessly into the intestine.—*Journal A. M. A.*

SOCIETY REPORT

THE NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS

Stated Meeting, Held April 10, 1919

MURRAY H. BASS, M.D., *in the Chair*

A CLASSICAL CASE OF HEMOPHILIA WITH HEMOPHILIC ARTHRITIS

DR. MAY G. WILSON stated that this boy, W. B., 9 years of age, was born in Jersey City of Italian parentage and had been under observation at the Cornell Children's Clinic for the past 2½ years.

The paternal history as far as was known was free from hemophilia. On the maternal side the disease could be traced back two generations. The maternal grandmother died of tuberculosis and whether she had any symptoms of hemophilia was in doubt. There were 12 children, several of whom died of tuberculosis. Two of the sons, uncles of the patient, died, one of tuberculosis and the other of hemorrhage at the age of 18 years. He was a bleeder. One of the aunts gave a history of purpuric spots, following trauma from childhood. She had 2 children, not bleeders. A second aunt also gave a history of purpura and was the mother of 3 boys, 2 of whom were bleeders. The third aunt gave a similar history, and was the mother of 8 boys, 7 of whom were bleeders. The mother of the patient gave a similar history of purpura. She has had 12 children and several induced miscarriages. Seven of the children were living. One boy, who was a bleeder, died in infancy. The other children who died were not considered bleeders. Three sisters, 20, 15 and 7 years of age, all gave a history of purpuric spots and bruises, but no other symptoms. Three brothers, aged 24, 17 and 13 years, were living. The eldest gave a history of bleeding and of joint involvement.

In summing up, the following points in the family history were of interest: 1. Definite maternal transmission of hemophilia to the majority of males through two generations. 2. The persistent evident hereditary purpuric tendency in the females.

3. The characteristic marked fertility and larger proportion of males in the offspring. 4. The history of tuberculosis.

The general physical examination of the patient showed that he was a malnourished, anemic, dark-complexioned boy, of slender build, good intelligence, sanguine temperament, corresponding to the erethetic type of Wachmuth. The abnormalities brought out by the physical examination were a D'Espine sign to the 4th dorsal. His past history showed that measles, scarlet fever and pertussis were passed through without any unusual symptoms. The child was subject to repeated attacks of bronchitis. Vaccination was not attended by any bleeding. After birth a purple spot, the size of a quarter, was found on the palm of the patient's right hand; this disappeared in a short time. There was persistent oozing for a month from the umbilical wound. At the age of 2 years spontaneous hemorrhages appeared under the skin and on the mucous membranes. Slight trauma was followed by bleeding and bruises. At the age of 3 years epistaxis nearly proved fatal. Second dentition was associated with constant oozing for several months. There is no history of hematuria. At the age of 4 years there were repeated convulsions for 2 weeks with a hemiplegia which cleared up. No doubt there was a cortical hemorrhage. Recently bleeding from the tongue, caused by a scratch with a piece of bread, was very severe and controlled with difficulty. Ten days ago there was a hematoma the size of a grapefruit in the left groin which was now absorbed and only showed the usual play of colors.

The mother states that she can usually anticipate the onset of spontaneous ecchymosis and hemarthrosis from the boy's appearance and complaints. The first joint involvement was that of the ankle at the age of 5 years which was followed by frequent repeated attacks involving elbow and knee joint, and occasionally the smaller joints. There semed to be a definite history of trauma with many of the attacks. The usual course and symptoms of the hemarthrosis was as follows:—Either following trauma or spontaneously there would be acute pains in limbs, and joints, facial pallor and anorexia and for a few days one or more joints suddenly became swollen, filled with fluid, hot, tender and painful, stiff but not red, and associated with local symptoms. There was general prostration and a temperature varying between 102° F. and 103° F. After a week or 10 days the local and constitutional symptoms would abate, the effusion was absorbed entirely, as in the right elbow which 10 days ago was swollen to 3 times its normal size. Sometimes, as the result of repeated attacks, there was some stiffness remaining and the joint became the seat of a subacute or chronic process with distinct deformity and crippling, as in the left knee which is at present swollen, painful and filled with fluid.

The typical hemophiliac history may be summed up under 3 main headings; 1. Spontaneous and traumatic bleedings. 2. Spontaneous and traumatic hematoma, ecchymosis and petechia. 3. Typical hemophiliac arthritis as described by Frank Hoenig and illustrative of the pathology: (1) hemarthrosis, effusion of blood in the joint; (2) subsequent attacks producing panarthritis; (3) end result deformity and ankylosis.

Discussion—DR. ALFRED F. HESS said that he saw this case and his brother a number of times a few years ago. They are the most typical cases of hemophilia with the most complete family history he has ever met. Most cases of hemophilia occur in large families; there were 12 children in this family. A great many of the boys were affected (3 out of 5) and none of the girls, and the condition could be traced back for several generations. In fact one rarely gets such a complete hemophilic history.

The blood coagulation time in these boys was 2 or 3 hours; the shortest coagulation time was about 20 minutes. There was a diminished prothrombin content; the blood platelets were normal, being from 200,000 to 300,000; the capillary resistance time was normal; adding calcium did not change the coagulation time; the antithrombin was also normal. The only abnormality in the blood was the increased coagulation time and the relatively diminished prothrombin.

Many hemophiliacs begin to bleed very early in life. In one of these cases there was bleeding from the umbilicus at birth and in the other very early in infancy.

It was formerly thought that women were spared, but we find that the women in hemophilic families frequently show signs of purpura. This was true in a case he reported a few years ago. If one goes into the family history of hemophiliacs carefully one will find that the women frequently have had purpuric spots and a tendency to bleeding.

The brother of the patient presented has completely ankylosed joints, his knees being especially involved, so that he is unable to work. Nothing can be done for him and there is nothing that shortens the coagulation time of the blood.

Dr. R. E. Herendeen said that the radiographic findings were as follows: The right elbow shows no definite pathology. The left elbow presents definite evidence of pathology characteristic of the arthritis seen in hemophilia. The right knee joint presents some slight evidence of involvement. The left knee joint shows evidence of fluid; the joint is hazy, irregular in outline, the irregularity being produced by small areas of increased density, suggesting an increase in fibrous tissue. There is no evidence of destruction. The process seems rather to be one of production of fibrous tissue on the articular surfaces of the epiphyses.

A CASE FOR DIAGNOSIS

Dr. Morris Friedson stated that this patient, D. C. E., is a female, 20 months old, admitted to the New York Nursery and Child's Hospital on March 28. Her chief complaint is jaundice.

The family history shows that the father is 26 years of age, chauffeur, moderately alcoholic, who has not lived with the family for the past 7 months. The mother is 19 years of age and in good health. There is no history of miscarriage. The mother is not alcoholic. The history of both parents is negative as to rheumatism, gout, diabetes, syphilis, tuberculosis, epilepsy or other nervous disease. There is no history of familial jaundice.

The previous history of the child shows a normal labor at full term, there being no cyanosis or convulsions. She was breast fed for 14 months. She sat up at 6 months and cut her first teeth at 9 months. She talked at 11 months and seemed to be a very bright child. She has been properly fed on a varied diet at stated periods. She has been given no drugs or alcohol.

The child's present illness began about 7 weeks ago, at which time she lost her appetite, became less playful than usual, was drowsy at times, had one vomiting spell, her bowels were constipated and she had some fever. These symptoms persisted for 2 weeks and were attributed to teething. During the first week in March the child suddenly became jaundiced. The jaundice was not ushered in by vomiting, pain or high temperature. The urine was dark in color and the stools became white. One week before admission to the hospital, the grandmother, who is taking care of the child, noticed enlargement of the abdomen. At no time did the patient have chill, high fever, itching of the skin, hemorrhage, swelling of the feet, or any nervous symptoms. Though her appetite was poor the child seemed to be comfortable and slept well.

During the 2 weeks that the child has been at the hospital she has been fairly comfortable, her appetite has been good, and she has one or two copious clay-colored bowel movements a day. The jaundice is as intense as at the time of admission and the abdominal enlargement is perhaps slightly increasing. The temperature during the first 9 days ranged between 98° F. and 100° F., for 2 or 3 days rising to 104° F. and 103° F. For the past 2 days it is down again to 99° F. or 100° F. The pulse rate has been between 120 and 140; it has never been slow. Respiration has not been markedly increased.

We have here a history of intense jaundice, enlargement of the abdomen, clay-colored stools, dark colored urine, and moderate fever, lasting 5 weeks.

The physical examination shows the patient extremely jaundiced and rather poorly nourished. She looks chronically ill, and somewhat dull and listless. She sits alone, can walk and speaks a few words. The head is normal in shape and size. The fontanels and sutures are closed. The sclera are deeply jaundiced. The pupils are equal and react to light. There is no strabismus or nystygmus. The nose and ears are normal. The mucus membranes of the mouth are bile tinged. The tongue is slightly coated. The gums are a little coated and congested, bleed readily and are ulcerated around the upper and lower left molars. There are 13 teeth present. The tonsils are not particularly enlarged and are not congested. The child has no evidence of adenoid obstruction. The submaxillary and cervical lymph nodes are small but palpable. The axilary and inguinal lymph nodes are somewhat larger. The epithrochlears are not felt. The thorax is normally shaped; there is slight beading of the ribs. The heart is not enlarged. The apex is in the fourth interspace, in the nipple line. The first sound is of good muscular quality, accompanied by a short, soft systolic murmur transmitted upward. The pulmonic is accentuated. There are no murmurs at the base. The heart rate is rapid (130-140) and regular. The pulse is rapid, but of good tension. Examination of the lungs shows moderate dullness and diminished breathing at both bases; otherwise they are normal. The abdomen is prominent, there being evident bulging in the epigastric and hypochondriac areas. The superficial veins are quite dilated in the upper abdominal region. There are a few telangiectatic spots. The circumference of the abdomen in the epigastric region is 20 inches, as compared with a chest circumference of 18 inches. The liver is uniformly enlarged, quite firm and tense, smooth, and the edge is rounded. It extends 4 inches beyond the costal border in the mammary line on the right side, 3½ inches in the midline, and 1½ inches in the left mammary line.

The spleen descends about 1½ inches beyond the costal border, is moderately firm, smooth, and the edge sharp. There is no shifting dullness, or other signs of fluid in the abdominal cavity. The genitals, extremities, joints, and reflexes are normal. The skin is poorly nourished, deeply jaundiced, dry, and shows scattered telangiectatic spots.

The blood count on March 30 showed red blood corpuscles 3,830,000; hemoglobin, 85 per cent; leucocytes 14,800, polymorphonuclears 44 per cent; large lymphocytes 10 per cent; small lymphocytes 46 per cent; transitionals 0 and eosinophiles 0. On April 8, the count was as follows: Red blood corpuscles, 3,110,000; hemoglobin 75 per cent; leucocytes 15,200; polymorphonuclears 36 per cent; large lymphocytes 36 per cent; small lymphocytes 61 per cent; transitionals 1 per cent and eosinophiles 0. The fragility test showed no hemolysis under 0.9 and the coagulation time was normal. The Wassermann test was negative and also the von Pirquet. The throat and vaginal smears were likewise negative. The stools are large in amount and clay-colored, show an extensive amount of fat and starch granules, but no parasites and no bile. The urine is strongly acid and shows an occasional trace of albumin and the presence of bile. The microscopic examination is negative. The child's weight on admission was 18 pounds 1 ounce and at the present time is 18 pounds 6 ounces. The x-ray examination shows a large liver, but nothing else.

We are here dealing with a case of obstructive jaundice, as evidenced by the extreme jaundice, bile-free stools, and urine containing bile. The points to be taken into consideration are: 1. The obstruction is either within the common bile duct or hepatic duct or diverticulum of Vater and is due to either a stone or a parasite. 2. There is an inflammatory, cicatricial, or neoplastic, primary or secondary, stenosis of the ducts. 3. There is compression of the ducts from without by tumor of the pancreas, stomach, intestine, regional lymph nodes, kidney, or swollen glands. 4. Kinking or torsion of the duct in consequence of tumor of the abdominal organs. 5. Inflammatory conditions: (1) actue catarrhal jaundice or actue catarrhal cholangitis. (2) syphilis, gummatous or intestinal hepatitis. (3) neoplasm. (4) cirrhosis, portal or biliary.

The case is presented in order to get opinions as to diagnosis from the members of the section.

Discussion—Dr. George Dow Scott said that he had seen cases similar to the one presented by Dr. Friedson and was surprised that Dr. Friedson had ruled out tuberculous peritonitis. In a tuberculous peritonitis the caseous deposits might cause pressure on the duodenum or gall-bladder producing the jaundiced condition which this child presented. The acuteness of the condition was such as we would expect in miliary tuberculosis and he thought if the omentum were examined it would be found studded with miliary tubercles. It seemed to him, from his cursory 5 minutes examination, that we have here a straight case of tuberculous peritonitis. Dr. Friedson did not get a positive von Pirquet reaction because the child was so overwhelmed with the infection. He felt that the von Pirquet test was very unsatisfactory anyway. This case therefore looked to him very much like a pure case of tuberculous peritonitis.

Dr. Friedson, in closing said in reply to the question about the Wassermann reaction, that the Wassermann on the child was found negative.

He had really nothing to add, except to say that Dr. Scott's suggestion would be considered, though he had found no evidences of tuberculosis. The temperature course is not that of tuberculous peritonitis, and the von Pirquet was negative. There is no family history of tuberculosis, and there has been no exposure. The failure to feel any masses in the abdomen does not bear out that diagnosis, but this condition must nevertheless be considered.

We have limited our diagnosis to 3 possibilities: (1) A primary new growth in the liver, so situated as to press on the hepatic or common bile duct causing complete obstruction, or a secondary new growth due to a primary condition elsewhere, but causing by its pressure obstruction of the hepatic ducts: (2) Syphils of the liver. Though the Wassermann test was negative, we shall try the therapeutic test; (3) Catarrhal jaundice, cases like this, of longer than the usual course, having been previously reported.

INTUSSUSCEPTION

DR. F. ELMER JOHNSON stated that this patient, J. R., 5 months old, was admitted to the Babies' Hospital on February 15, 1919. His chief complaint was pain, vomiting and bloody stools. The first attack had continued 8 hours, the second 6 and the third 2 hours.

The family history was negative.

The patient's past history showed that he was born at full term and the delivery was normal. His birth weight was 8 pounds. He had never been acutely ill, but had always been constipated.

He was perfectly well up to the day before admisison when he seemed restless. At 9 o'clock the night before admission he was taken very suddenly with screaming as though in great pain. This lasted a minute or two and then recurred every 15 minutes. Three hours after the onset an enema was given with a good fecal result. Two hours before admission (5 a. m.), the baby passed a stool of almost pure blood. While in the admitting room he passed another blood stool. The baby vomited food at midnight but at no other time.

The physical examination showed a well nourished, well-developed baby, weighing 6825 grams. The baby was actually ill and restless. His face was flushed and at frequent intervals the baby strained as though at stool. This was accompanied by considerable pain. The abdomen was soft, though slightly distended but there was no muscle spasm anywhere. The lower part of the abdomen was more prominent and upon palpation there could be felt a tumor about 3 inches long extending from just below and slightly to the right of the navel to the pelvis. There was no difficulty in feeling the mass through the abdominal wall. Upon rectal examination about 2 inches from the anus could be felt a mass occluding the lumen of the gut and giving the sensation to touch that one feels in making an examination of the os uteri. There was considerable blood in the rectum. The rest of the examination was of no importance.

A diagnosis of intussusception was made.

Nine hours after the probable onset of the intussusception the baby was operated upon by Dr. Farr under ether anesthesia. A right rectus incision was made. The tumor mass was easily brought into the wound and found to be an ileocecal intussusception. The intussuscipiens extended to the sigmoid. The invagination was reduced with ease up to the point where the cecum and appendix were delivered. Here there was so much edema and discoloration that the gut looked gangrenous. The serosa was torn in 2 or 3 places in the effort to reduce the invagination. The wound was closed in layers. He recovered from the anesthetic promptly and had an uneventful convalescence, except for 2 vomiting attacks the day of the operation. The temperature reached 101.6° F. the day of operation, but was normal after that. The baby was discharged as cured on February 26, 11 days after operation.

He was readmitted on March 5, 1 week after discharge and 3 weeks after operation. He had been well up to the day of admission when he vomited and cried as though in great pain. The vomiting occurred with even the intake of water. He had 2 watery green stools but no blood. An enema was given but without relief to the baby.

Examination showed that the child's weight was 100 grams less than when discharged. The baby was restless, listless, and irritable when touched. He did not seem acutely sick. His temperature was 100° F. The abdomen was soft and easily palpated. No tumor masses could be made out. Rectal examination was likewise negative.

Stomach lavage returned clear except for a small amount of mucus and a few blood shreds. The baby was given nothing but water the first 24 hours without vomiting. The next day, March

6, the baby was put to the breast but vomited the entire feeding with a bile-stained discoloration. There were also a few blood shreds. Thinking that the baby was suffering from an acute attack of gastroenteritis, perhaps due to the fact that the mother was menstruating at this time, the baby was put on fat-free lactic acid milk. The baby did not vomit the first 2 bottles but in the evening of that day he began again and vomited everything until he was operated upon the following noon.

A thorough examination of the abdomen on the day previous to operation was made under ethyl chloride but nothing was made out. A colon irrigation was returned with greenish mucus and a few shreds of blood. The blood examination on March 5 showed white blood corpuscles 14,000 and polymorphonuclears 64 per cent. On March 6 there were 17,000 white blood corpuscles and 79 per cent polymorphonuclears.

On March 7 the baby was much worse and looked the picture of intestinal obstruction. The facies was anxious and pinched. He was very restless. The abdomen had become distended but not hard. The vomiting had continued steadily even when small amounts of water were given.

Dr. Farr performed the operation making the incision at the median side of the old scar. Upon opening the abdomen, several loops of small intestine were found adherent to the old scar throughout the entire length of 2½ inches. These were separated carefully and then the same bands were found to reach from one loop to another. These also were separated. The baby was put back on the breast and made an uneventful recovery.

This case is interesting: 1. Because of the two operations on such a young infant within 3 weeks. 2. Because of the difficulty of making a diagnosis at the time of admission. 3. Because of the thickness of the bands of adhesions forming in 3 weeks. 4. The relative safeness of operation as compared with expectant treatment.

PURPURA HEMORRHAGICA

Dr. Charles A. Lang stated that this patient, W. M., 4 years, 9 months old, was admitted to the New York Nursery and Child's Hospital on March 25, 1919. His chief complaint was nose bleed for 24 hours and "bruise spots" for the past 5 days.

The family history showed the father and mother both healthy, there being no history of tuberculosis. One child had died of tuberculous meningitis and this child was exposed. There was one other child which was healthy. The mother's father had frequent attacks of nose-bleed which were difficult to control, but had been better for the last 5 years as far as the mother knew.

The patient gives a history of having had measles at the age of 6 months, pertussis at one year and influenza 4 months ago, at which time he was ill 8 days. He did not make a rapid recovery and was pale afterward.

His present illness began 5 days before admission to the hospital, when his mother noticed 2 raised purplish spots (like bruises), one on the right patella, and the other over the left tibia, midway between the ankle and knee. There was no tenderness and the child did not seem to have any fever. The next morning 4 or 5 additional spots had appeared over the right and left tibia. There was no fever. There were no joint pains. A purplish discolored patch the size of a 10 cent piece appeared over the left side of the forehead and one the size of a pea on the left side of the tongue. There were also numerous pin-point hemorrhages over the flexor surfaces of the thighs and legs. Three days before admission the child tripped and fell to the floor striking the right side of his face. This was followed by immediate discoloration of the right eye and also of the skin surrounding the left. The child seemed bright, had no fever and no sore throat. During the next 2 days he continued the same. The following day he had a nose bleed, after which he did not seem pale. There was no spitting of blood, no blood in the urine or stools. He was admitted to the hospital 24 hours after the nose bleed.

Physical examination showed a well-nourished, well-developed, pale child. The right eye is closed with immense discoloration for 2 or 3 inches surrounding it. At the outer edge of the eye brow there is a reddish spot; the remainder of the area is purple. The left eye is only moderately swollen. Both lids are involved but the child can see out of this eye. There are no hemorrhages into the conjunctiva. The sclera is clear and the pupils are equal and react to light. There is one small spot the size of a 10 cent piece on the left side of the forehead (not raised) and a spot over the left ear, which is purplish brown and the size of a 10 cent piece. There is a blood clot in the left nostril. There are small hemorrhages over the mucous membrane of the mouth varying in size from a pea to a pin-point; there are also spots over the tonsils and back of the throat, some of which are quite large. There are scattered small brown spots over the flexor surfaces of the legs and forearms. On both knees and between the ankles and knees, there are several large raised purplish brown spots, the size of 25 and 50 cent pieces which are not painful. Most of these spots are closer to the knee joints and 1 or 2 are above the knee joints on the anterior surface of the thighs. These spots are not large. There are 2 small spots on the abdomen. The examination of the ears and eyes is negative. The tonsils are large and look diseased. The teeth are good. The lungs negative. The heart shows a hemic murmur, disappearing when sitting up. The heart is not enlarged. The abdomen is full, not rigid. The liver is one finger below the costal margin. The spleen is not palpable. There are no masses in the abdomen. The genitals are normal. Knee jerks are present and not increased. There are no swollen or painful joints. The cervical glands are enlarged, discrete and readily felt, as are also the inguinal and axillary glands. The epitrochlears are not palpable.

The nasal hemorrhage on March 28 was preceded by a rise in temperature, headache, slight nausea and vomiting, and there was oozing on and off from 4 A. M. to 9 A. M. The eyes were about the same and no new spots were seen. The others seemed to be improving. The pallor was apparently increasing. The hemoglobin at this time was 50 per cent. The nose was packed with adrenalin and 10 c.c. of horse serum was given subcutaneously.

The von Pirquet, blood culture and Wassermann tests were negative. The coagulation time of the blood was 6 minutes on March 28. The examination of the urine was negative. Occult blood was found in the stools. During the time the child was under observation the red blood cells varied from 2,100,000 on March 25 to 2,980,000 on April 2. The hemoglobin which was 60 per cent on March 25, fell as low as 45 per cent. on March 29 before transfusion and on April 2 was 70 per cent. The polymorphonuclears were 57 per cent on March 25 and on April 2 were 76 per cent. The white blood corpuscles numbered 8,800 on March 25 and 18,400 on April 2. On April 4, the red blood corpuscles had risen to 3,333,000 and on April 7, they numbered 2,810,000. On April 7, the hemoglobin was 75 per cent, the white blood corpuscles 18,200, polymorphonuclears 66 per cent, large lymphocytes 8 per cent as compared with 27 per cent on March 25, the small lymphocytes were 24 per cent as compared with 15 per cent on March 25. On March 29, a transfusion of 400 c.c. of blood from the mother was given by the Lindermann syringe method. There were apparently no bad results. On March 30, the hemoglobin had increased to 70 per cent. On April 1, the child's general condition had improved. He could open the right eye, his color was better and the spots on the legs were much smaller. On this day his temperature rose to 103.4° F; the cause of this rise was not apparent. Physical examination at this time was negative. On April 3, the child felt well. No apparent cause of temperature. He was bright. On April 4, there were diffuse red blebs all over his body. This was probably the result of the horse serum given 8 days previous. On April 6, the temperature was falling slowly and the child was in good condition and had had no further hemorrhages.

The treatment from March 28 to date was aspirin, 5 grains, and bicarbonate of sodium, 5 grains. He was also getting a tonic from April 7, consisting of citrate of iron and quinine in sherry wine.

A CASE OF ATELIOSIS

Dr. B. M. Wronker stated that this child was 12 years of age, the ninth of 9 children. The others were all well, well formed and tall. The father and mother were both quite tall and the whole family excepting this child were well developed.

The past history of the child shows that she was born at full term and that the labor was easy. The child developed in an apparently normal manner until she was 6 months of age and then the mother began to wonder why she did not grow.

She came under my observation in June, 1915, at the age of 8 years, on account of her lack of growth. At that time she weighed 24 pounds 9 ounces and was 34½ inches in height. The x-ray pictures taken at that time showed that the development of the bones was that of a child of about 4 years of age. The teeth were all present. She still had the first teeth and the second ones were also present but unerupted as shown by x-ray. From that time until the present she has made the following progress. In December, 1917, she weighed 30 pounds and in April, 1919, she weighed 33 pounds. In 4 years she has gained a little over 8 pounds. In June, 1915, she measured 34½ inches in height; in December, 1917, 37¾ inches and at the present time 39 inches, having grown about 4½ inches in 4 years.

The child is perfectly normal mentally and is in the proper grade for her age in school. I have not had any x-rays taken recently, but those taken 2 years ago were very little different from the ones taken in 1915.

The child presents none of the characteristics of achondroplasia, nor of cretinism. She has a characteristic old facies somewhat suggestive of a "lion face." There is a lack or very slow development of the skeletal system.

All forms of internal glandular extracts used, both singly and in various combinations, have been without avail in bringing about a more rapid deveolpment, although all have been given a fair trial over periods of 2 to 4 months, respectively.

Discussion—Dr. Murray H. Bass stated that this case came under his observation about 4 years ago and he thought she was a typical example of ateliosis. This condition had been mentioned by Hastings Guilford who calls attention to the fact that it manifests itself in the stature only while the mentality corresponds to that of a normal child of the same age. These are not cases of infantilism. The condition may begin in early infancy and the person remain extremely small or they may start at the age of 2 or 3 years and the person cease to grow much after that time, or they may start at the age of puberty and the person remain at that stage of physical development.

As regards dentition, these children come under 2 groups; that is dentition may be slow but normal or it may be abnormal.

This is the type of individual that is seen at exhibitions, circuses, etc., together with the achondroplasiacs, though from the medical standpoint the two conditions could never be confused.

Another feature that is referred to as typical of these cases is the leonine expression, and that is very typical in this child.

Dr. George Dow Scott said that we see a number of these cases of dwarfism. He had a baby under his care that was 2 years of age that he first saw when she was 3 months old. He had tried a variety of different ways of feeding the child and she still weighed 16 pounds or slightly over. He couldn't succeed in making her gain in weight although he had used internal secretions in ascending doses. Otherwise the child was perfectly normal except for optic atrophy. He had had an x-ray of the cranium taken, but it showed nothing in reference to the pituitary body and no abnormality in bone formation.

CASE OF COMPLETE EXTROPHY OF THE BLADDER

Dr. Sara Welt stated that this boy was about 4 years 9 months old and came under her observation at the Mt. Sinai Hospital Dispensary.

His family history was negative. The mother had the right kidney extirpated before his birth, and at the child's birth this condition was noticed. He seems otherwise normal and healthy and enjoys life. He seems otherwise perfectly well developed. There appears to be an absence of the umbilicus, but the umbilicus is not really absent but forms the upper edge of the tumor formed by the inverted posterior wall. The bladder wall is separated from the surrounding skin by thick scar tissue. The hernia is divided into an upper and a lower part and is also separated into a right and left portion by a longitudinal band. The ureters can be seen on both sides and the urine escapes from them, not making use of the vestigeal urethra below. The scrotum is empty. The rectum and sphincter ani are normal. Rectal examination reveals an absence of a portion of the pubic bones.

CASE OF DEXTROCARDIA

Dr. Henry Heiman said that this patient was a male, 10½ years old, brought to him for physical examination.

The family history was entirely negative,

The patient's past history shows that he has had 3 attacks of pneumonia, diphtheria when 6 months old and pertussis when 2 years of age. Since the attack of pertussis he has had a persistent cough every winter. He vomits occasionally. There have been no other symptoms, no dyspnea, no epistaxis, no pain.

The physical examination reveals a definite dextrocardia. The apex is 10 cm. to the right of the midsternal line. The right border 3 cm. to the left.

The fluoroscopic and x-ray examinations confirm the diagnosis showing a situs invertus of the viscera also. The blood pressure is 110 systolic and 75 diastolic.

The urine is negative.

TRANSPOSITION OF VISCERA

Dr. Charles Hendee Smith stated that this boy, 11 years of age, came to Bellevue Hospital Dispensary on March 13 because of a bad cold. In examining him it was found that he had a complete transposition of the viscera including the abdominal viscera. There is nothing else especially worthy of note about him. The boy has a history of having had glands removed from his neck when he was about 8 years of age. He is a poorly nourished child, weighing 65 pounds and measuring 54½ inches in height which for a boy of 11 years is considerably under weight. His present condition is at least suggestive of the possibility of the existence of tuberculosis elsewhere.

There is an indefinite mass in the right upper quadrant and also in the left lower quadrant which I think may be tuberculous peritonitis. The von Pirquet test has been negative on two occasions. That, however, may not be of great significance as we have often failed to get a von Pirquet reaction in cases that were definitely tuberculosis (during the past winter). At a rough estimate we have had not more than 10 per cent positive reactions in cases among which we would have expected to get 50 per cent positive results in New York City. Men interested in making the von Pirquet test in other institutions have had the same impression. When we have gotten a reaction it has been very strong but we have failed to get moderate reactions, so we have thought that possibly the tuberculin was not of good quality. Of course one may have such advanced tuberculosis that no reaction can be obtained. We have tried both the bore and the scratch methods and the results have been very discouraging.

Discussion—Dr. L. T. Le Wald stated that he was interested in the 2 cases of transposition of viscera. He had seen 19 such cases and observed a large number of reports. The condition was quite frequent, it being estimated by one observer that there was one such case among every 3,000 of the population, so that if they were all gathered in one community they would make a city at least the size of Jersey City. It is because there are so many of these individuals that we are encountering the condition so frequently. It was first observed by the pathologist and then the internist began to call attention to the frequency of the condition and now the pediatrist. The earliest case he had seen was 12 years of age, but these 2 cases were 10 and 11 years of age. Occasionally a case is discovered during an attempt to make an examination with the bronchoscope, and the bronchoscope goes more directly into the left bronchus instead of into the right.

There are three interesting sidelights on the problem. We have a complete transposition as in these cases. One should not be misled by a dextrocardia for in most cases in which there is a dextrocardia there is complete transposition of all the viscera, stomach, liver, and spleen. In one of his first cases on autopsy, he found there was also transposition of the kidneys and suprarenals.

The question of right and left handedness has been brought up in connection with these cases, and also that of cerebral localization has to be considered.

Another point to be considered is that these cases may be confused with nonrotation of the colon, in which case the appendix and cecum will be on the left side. We may, however, have a combination of the anomalies, nonrotation of the colon and complete transposition of the viscera and when we have this it will bring the appendix back on the right side, and we will not find it on the left side as we would in a complete transposition of the viscera. One such case has been reported in the literature.

The case shown by Dr. Smith illustrates another point; a pneumothorax on the left side may push the heart to the right. Another thing is retraction at the site of an old pleuro-pericarditis on the right side with the formation of adhesions with the result that the heart will be retracted to the right side. In that type of case the electrocardiogram will come to the rescue and assist in a correct diagnosis. He had such a case. The electrocardiogram of a true transposition is an absolute reversal of the normal electrocardiogram, but in this type of case in which the heart is displaced as the result of retraction the curve of the electrocardiogram is irregular and is significant of some displacement and not of transposition.

Dr. Charles Hendee Smith said that he had 3 cases of transposition of viscera at Bellevue Hospital this winter and one today. He also had a case simulating the condition, the entire pulsation being to the right and dulness on percussion to the right. We may have a condition of congenital heart simulating dextrocardia.

Dr. William L. Rost said that he was interested concerning the von Pirquet reaction. It seems that the man who made the von Pirquet test said it was negative. A child with a negative von Pirquet reaction may or may not have had tuberculosis. We should recognize the fact that in order to exclude tuberculosis we must do a Stich reaction. In our clinic we do not think we can rule out tuberculosis unless the Stich reaction is absolutely negative.

Dr. Bass said that he agreed with Dr. Rost that the von Pirquet may be negative and the Stich positive, but in spite of that he also agreed with Dr. Smith that during the past year he had not had as many positive tests with the tuberculin as he formerly got. He thought there was something wrong with the tuberculin and threw several bottles away. He had taken no statistics but his general impression was that he had had decidedly fewer positive von Pirquet reactions than usual.

A CASE OF SEROUS MENINGITIS

Dr. Howard Harris Mason stated that this little girl, 7 years of age, came under his observation at the Presbyterian Hospital, on February 11, complaining of severe paroxysmal headaches.

She was the first child in the family, the mother having had 4 miscarriages since her birth but none before.

The Wassermann was negative in both mother and child. There was no history of tuberculosis.

The child's past history was of no importance.

Her present illness began 5 weeks before entering the hospital when she had a discharge from the left ear and then the right ear had to be opened and irrigated for a week. She then had a free interval for about 2 weeks during which she was perfectly well. Then 5 days before entering the hospital she began to suffer with paroxysmal headaches, beginning in a small area over the left eye and later over the right eye. The attacks lasted from 5 to 8 minutes and then there would be a free interval followed by another attack. These attacks occurred several times during each night but not so frequently during the day. For the past 5 days and attacks have been more severe and the child has been drowsy and has taken scarcely any food. There has been some nausea and constipation. The course has been progressive. The child complains of a tired feeling and at first was listless, later drowsy. There have been no convulsions. The patient complains bitterly of the pain. The pulse is 54 and quite irregular. Respirations are 22 and regular. She shows a Macewen's, more marked on the left side. The pupils are equal and react to light and accommodation. There is papillary edema of both discs. The child has a coated tongue. The abdomen is retracted and tender in the epigastric region. There is no Babinski. There is a very slight suggestion of stiffness of the neck. The lumbar puncture shows 52 cells, 97 per cent small lymphocytes. The Ross-Jones is negative. The x-ray of the skull shows nothing abnormal. The von Pirquet is negative.

The child improved after the lumbar puncture and a second lumbar puncture was performed; 12 c.c. of spinal fluid was removed, which showed 19 cells, all lymphocytes. The blood count showed 14,000 white blood cells and the question came up as to whether the child had a new growth. Dr. Tilney examined the child and could find no evidence to bear out that supposition.

The pulse rate rose to 68-72. The child left the hospital in good condition on March 5 and returned on March 29, stating that during the interval from March 5 to March 23, she had been all right. On March 23, she developed severe abdominal pain and the only findings were rigidity of the neck and slight epigastric tenderness.

When the child came into the hospital she showed more marked changes in the eyes, 7 diopters on the right side and 6 on the left. Lumbar puncture with the removal of 15 c.c. of spinal fluid showed only 23 cells, and the leucocyte count was down to 10,000 at that time. A lumbar puncture was done on April 12 which showed only 7 cells. Since that time the child has been in and out of the hospital and has been watched. In August, the eye-grounds were practically normal. Since April, the blood count has been normal.

It seems to me that this must be a case of serous meningitis with double otitis 2 weeks before the appearance of meningeal symptoms.

A CASE OF PHONATION TIC

Dr. Murray H. Bass stated that this child was a boy, 8 years of age, the youngest of 8 children. The other children were all well and the mother and father were healthy. This boy has had chickenpox, measles and rheumatic pains in his joints.

He was consulted to find out why the boy made a peculiar barking sound. He has done this for the past 3 years with the exception of a period of 3 months when he was free from it.

The physical examination was negative except for slight adenoids.

This sound has been sufficiently annoying to necessitate keeping the boy out of school and the father tells us that in saying long sentences he has noticed that the boy puts an unusual accent on certain words. He still speaks in that peculiar manner. In speaking just now he does not make the sound. This is because coming before the audience has frightened him out of it. However, he makes the sound voluntarily. During his attendance at the clinic he has been unable to inhibit the sound.

I believe this affection is a definite tic involving the muscles of phonation. There is no tic of the skeletal muscles or of the face that I have been able to make out. He is to be referred to the neurological department for treatment from the psychic standpoint.

COMPLETE PNEUMOTHORAX

Dr. Charles Hendee Smith stated that he had a case which he wished to report for Dr. Zuckerman who was not able to be present.

This child, 7 months of age was brought to Bellevue Hospital on February 3, 1919. The child was of American parentage, the youngest of 3 children. The others were all living and normal. The labor was normal and the child breathed after a brief effort at resuscitation. The child had been breast fed to date. It was brought to the hospital because of a rash on the buttocks. The mother also noticed that the child breathed rapidly and with difficulty.

Physical examination showed the child to be in fair condition, weighing 10 pounds. There was some eczema on the face and buttocks. The lungs showed hyperresonance on the left side with absence of breath sounds. There was a displacement of the heart to the right. The breath sounds in the upper part of the right lung were very poor. The x-ray showed a cloudiness in this portion of the lung. There were many râles in the lungs.

When 3 months old, the condition became worse and the child was sent to the hospital where it remained until the time of its death on March 30.

Aspiration with the needle drew air. The child had several convulsions. The right lung became filled with râles and the child finally developed bronchopneumonia and died.

The diagnosis was complete pneumothorax on the left side, with subcutaneous emphysema of the left chest.

The child had not had pneumonia before the onset of trouble. The case was reported because it was unusual to find a complete pneumothorax in a child at this early age.

DEATH DUE TO ASPIRATION OF STEARATE OF ZINC POWDER

Dr. Murray Bass stated that he was called to see a child 10 months of age who was previously well and under exceptionally good care. The nurse had left the child for a few moments and on her return found that the child had reached the stearate of zinc powder and had spilled it in his face. At first the child appeared to her to be dead. She called the mother, who immediately sent for a physician. When he first saw the child a half hour later he was cold, pulseless and breathing was very shallow. Under artificial respiration and stimulation with caffein, etc. the child revived and seemed to be better for about 12 hours. The next morning the child vomited twice and passed mucus stools. At 4 o'clock, 24 hours after the accident, the child went into collapse, became pulseless, both lungs were filled with râles and there was bronchial breathing. In about 3 hours the child developed air hunger, a temperature of 102° F., respiration 104, and grew weaker.

There was no question but that the child had inhaled the stearate of zinc powder and that this was followed by acute bronchopneumonia throughout both lungs.

From a prophylactic point of view it is important to know that the inhalation of ordinary stearate of zinc powder, which is so generally in use, might have such a disastrous effect, as such information would enable those who were caring for children to guard them against the possibility of such an accident.

This child had no predisposition to pneumonia. The 2 interesting points in this case were the air hunger and the fact that the respiratory rate was higher than the temperature and remained so for about 5 hours.

Discussion—Dr. Welt stated that she would like to report a case very similar to the one reported by Dr. Bass which occurred in a baby 10 months of age. This child, while the nurse was putting a diaper on, took the box of stearate of zinc and upset the whole box in its nose and mouth. She used the stomach tube, washing out the stomach thoroughly and obtained a great deal of the stearate of zinc flakes. After this the baby had a temperature of 102° F., but returned to a normal condition after 3 or 4 days.

With reference to the case of extrophy of the bladder the question comes up what we are going to do with the boy. The condition usually becomes very troublesome with the constant dribbling and the resulting excoriation of the skin, the urinous odor, etc. It is said that about 50 per cent of these cases die before reaching the age of 10 years and the largest number of them die before reaching the age of 40 years. The cause of fatality is always ascending infection. There is only one way of dealing with the case and that is by surgical measures and these are of two kinds: Plastic methods and transplanting the ureters into the rectum. By the plastic operations the patients are usually worse than before, but the newer operation of transplanting the ureters into the rectum gives better results. She had made arrangements for such an operation in this case. Dr. Stevens of Bellevue has performed this operation and reports very satisfactory results.

Dr. Le Wald said that he was familiar with the case Dr. Stevens reported about 7 years ago. He implanted the ureters in the rectum. The boy had no infection of the kidneys, and was entirely relieved of symptoms so far as annoyance from urinary leakage was concerned. It was interesting to see in this case the exact bony anomaly that he found present in Dr. Steven's case. It was also interesting to see how Dr. Steven's case got about with the absence of the symphysis pubis.

Dr. Bass said that in his case it was thought that the child had swallowed the talcum and the stomach was washed out and a large amount of the powder obtained. The seriousness of his case was due to the fact that the child in addition to swallowing the powder aspirated it.

DEPARTMENT OF ABSTRACTS

LARKIN, JOHN H., AND CORNWALL, LEON H.: THE SPINAL FLUID IN EPILEPSY—A PRELIMINARY REPORT. (Journal of Laboratory and Clinical Medicine, March, 1919, p. 352.)

In the routine examination of the bloods and spinal fluids of 146 cases of epilepsy, consisting of the Wassermann reaction upon each, and upon the spinal fluids, pressure estimations, cell counts, globulin and colloidal gold reactions, Larkin and Cornwall give the following data:—In the bloods the Wassermann reaction was positive 12 times (9 per cent). An etiologic relationship between syphilis and the epilepsy might be presumed to exist in those cases. Diffuse neurosyphilis was present twice and general paresis once. The Wassermann was positive in the spinal fluids in one case of neurosyphilis and in the case of paresis, but in none of the other fluids. Pressure estimations were made 59 times, of which 9 were diminished (15 per cent), 18 were increased (31 per cent), and 32 were normal (54 per cent). The blood Wassermann was positive in one of the 9 cases with diminished fluid pressures, and in 2 of the 18 cases with increased fluid pressure. Among 143 fluids, on which cell counts were made, a pleocytosis was present but once, in a fluid from one of the cases of neurosyphilis. Six cells were present in 2 and 4 cells in 5 fluids. Twenty-six fluids were acellular and the remainder contained from 1 to 3 cells per c.m. The globulin content was tested in 137 fluids. There was a definite increase in 7 (5 per cent) and a slight excess in 22 (14 per cent). Two of the fluids with a slight excess of globulin came from positive blood Wassermann cases, but none of the fluids with definite globulin increase came from cases with positive blood Wassermanns. The Lange colloidal gold test was applied 114 times. Fifty-three (46 per cent) were within normal limits. Fifty-two (46 per cent) gave low curves to 2. Eight (7 per cent) gave moderately high curves to 3. The one paretic fluid gave the usual paretic curve. All but 2 of the fluids from positive Wassermann cases gave reactions within the normal limits. In the 2 exceptions, the curves only went to the shades of decolorization represented by the number 2. The authors claim that according to their studies of the chemistry of the spinal fluid there appears to be certain similarities in the effect produced by this secretion on solutions of colloidal gold in epilepsy, nephritis and vascular lesion of the neurospinal axis; in diffuse neurosyphilis and anterior poliomyelitis, and in paresis, multiple sclerosis, lateral sclerosis, brain tumor and eclampsia. In conclusion they ask the following questions (1) Is epilepsy due to some chemical change in the blood increasing its toxicity and thereby inducing the characteristic explosive motor phenomena after the threshold of tolerance is exceeded? Or are the objective phenomena induced by an increased toxicity of the spinal fluid caused by an altered physiology of the cells of the choroid plexus, meninges or neural parenchyma. C. A. Lang.

Jewesbury, Reginald C.: Case of Muscular Spasm in a Child. (British Journal of Children's Diseases, October-December, 1918, p. 269).

Jewesbury reports the case of a girl, 9 years of age, of British nationality, who was perfectly well until she was 7 years of age, when she began to suffer from weakness and wasting in the muscles of both legs. This condition gradually progressed, and she developed such a marked degree of talipes equino-varus that double tenotomy of the tendo achillis was performed. After this she was able to walk better for a time, but the condition gradually recurred and the legs became very stiff when she attempted to use them, and walking became exceedingly difficult. Subsequently, about 18 months after the legs began to be affected, she developed a similar loss of power with stiffness in the muscles of both arms and hands, and also in the muscles of the neck and spine. The family history was negative. There was no history of any previous illness, with the exception of measles. She was normally developed and highly intelligent. She was unable to put her heels to the ground, and walked on tip-toe with curious jerky movements of the legs but not a typical spastic gait. Any attempt to carry out a definite movement with the arms was made in a jerky way, rather like a child suffering from chorea. In grasping any object all the voluntary muscles of the body were thrown into a state of spasm. She appeared to have a certain amount of control over this spasm, and it was always much more marked when she was at all excited or agitated. She also had a persistent torticollis with a certain amount of spasm of the spinal muscles. The facial muscles were unaffected. No tremors or athetosis were present. The reflexes were normal. Cranial nerves were normal. Sensation was unaffected. Wassermann was negative.

Dr. Parkes Weber described the case as one of "dystonia musculorum deformans" (Oppenheim) or "progressive torsion spasm of childhood" and quoted Oppenheim as regarding it as an organic affection closely allied to athetosis. In his further discussion of the case he said that like paralysis agitans, Huntington's chorea, progressiva athetosis, pseudo-sclerosis, and Kinnier Wilson's progressive lenticular degeneration, it has been attributed to disease of the lenticular nucleus. It runs at first a chronic progressive course, with intermissions and even periods of improvement, and may then come to a standstill and remain stationary, other portions of the nervous system remaining unaffected. It has appeared as late as the seventeenth year. It is characterized by a peculiar mixture of hypertonus and hypotonus of the affected muscles. The face and muscles of articulation are usually not affected except in late stages, when there is involvement of the muscles of the neck. Amongst the earliest symptoms, or the earliest symptom, is partial or total loss of function in one or more extremities—usually the lower extremities—due to faulty tonus innervation. Talipes tends to persist. The movements of the affected parts are spasmodic but not truly athetotic. Psychical symptoms may occur, but the mental condition is generally normal. C. A. Lang.

Chesser, Elizabeth Sloan: Faradisation of the Mammary Glands as a Galactagogue. (Lancet, September, 1918, p. 356.)

Many women complain that the "milk goes" in spite of faithfully carrying out the doctor's orders. These cases call for special treatment, and the author conceives the idea of trying electrical stimulation of the mammary glands. If the mother's breast milk is insufficient which is shown by repeated weighing of the baby before and after nursing, and the infant's gain in weight is unsatisfactory galactogogues are used for several weeks. If no improvement is noticed the writer applies faradisation. Two hollow, cone-shaped, flexible electrodes are used. The circular bases fit round the breasts, and they can be adapted evenly to the surface of the glands. The electrodes are fixed in place with an elastic bandage. An ordinary faradic coil is used, and the connecting cables are attached from the secondary terminals to soldered terminals in the electrodes, which may be used bare or underlaid with several layers of moist lint. The current is passed through the two breasts for 20 minutes twice a week. The patient feels a gentle tingling, there is no discomfort or pain. In a series of 10 cases, 5 had from 8 to 10 treatments, 5 were sufficiently improved in from 4 to 7 treatments. In every case the child improved in health and an average gain in weight of 3½ to 5 ounces a week was maintained. In 6 cases the average gain in weight prior to beginning electric treatment was 1½ ounces to 2 ounces a week; in 4 cases the treatment was started at the first or second attendance of the child, as the test meal by weighing before and after nursing showed that less than half the required amount of milk was secreted. In giving faradic treatment it may be necessary for a couple of weeks to supplement the mother's milk by cow's milk or artificial food. After several treatments the milk is so improved in quantity and quality that extra feeding can gradually be given up. C. A. LANG.

PARKINSON, J. PORTER: A CASE OF APLASTIC ANEMIA. (British Journal of Children's Diseases, January-March, 1919, p. 1.)

Parkinson reports the case of a boy, aged 9 years, who gave the history of bruising all over the arms, shins, and back for a period of 6 weeks, with a rash resembling flea-bites appearing at the same time. For one month he had been bleeding at the mouth, the lips were painful and swollen, and the gums sore. Severe headache with pallor and breathlessness for 2 weeks. Had scarlet fever at 18 months, kidney trouble and dropsy one year later, measles and whooping cough when 6 years old, but no other illnesses. No family history of hemophilia. When first seen he was very pale and his face rather puffy. There was no rash except a few petechiae on the feet. Gums not swollen, but bleeding slightly. Tonsils enlarged and a few glands could be felt in the neck. The lungs and heart were normal except for a pulmonary hemic murmur. The liver and spleen were not palpable. Urine was negative. The temperature ranged from 99° F. to 100° F. in the evenings. The first blood count showed: Red cells, 1,260,000; white blood cells, 800; hemoglobin, 20 per cent; polymorphonuclears 29 per cent; lymphocytes, 72.5 per cent; eosinophiles, 0.5 per cent. The red corpuscles showed marked alteration in size and shape. The cause of the profound anemia was obscure. There was no reason to suspect scurvy, hemophilia, tuberculosis, or syphilis. The Wassermann was negative. Lead poisoning was unlikely. There was no evidence of intestinal parasites. Ophthalmoscopic examination showed slight optic neuritis and numerous hemorrhages into both retinae.

The anemia increased and the hemorrhages in the gums continued. Six weeks after the first blood count the red cells had gone down to 624,000, the white cells were 1,600, hemoglobin 17 per cent, polymorphonuclears 28 per cent, lymphocytes 68 per cent, eosinophiles 2 per cent. No nucleated reds were ever found. The child at this time was transfused being given 300 c.c. of citrated blood. There was very little if any improvement. Ten days later a second transfusion was carried out. This time 500 c.c. of citrated blood were given. Five minutes after beginning the transfusion the patient became collapsed, very cyanosed, and vomited, and the pulse became feeble and rapid. At the end of the operation there was some epistaxis, and several large pinkish spots appeared on the arms and body. For 2 days following the transfusion he passed bright blood in the urine and by the rectum; he also vomited blood and the epistaxis continued. At this time he became jaundiced and this jaundice lasted for 10 days. He was weak and drowsy. The heart apex was 1½ inches outside the nipple line, and a systolic murmur and a presystolic murmur were heard over it. The temperature became more elevated reaching 103.8° F. The child grew weaker and weaker and more drowsy, and had incontinence of urine and feces. The blood following the second transfusion was not improved.

He lay unconscious for 2 weeks and then without any further treatment began to slowly improve. One year later the boy seemed to have completely recovered. His color was good, heart had returned to its normal size, and the murmurs at the apex had disappeared. The blood count showed red blood cells 3,960,000 per c.c.; white blood cells, 5,800; hemoglobin, 65 per cent; polymorphonuclears, 32 per cent; lymphocytes, 32 per cent; eosinophiles, 2 per cent and hyalines, 1 per cent. There was no alteration in the shape of the red cells, no nucleated forms and no marrow cells. The hemorrhages in both ocular fundi had disappeared and the optic neuritis much improved.

The author concludes that this was a case of chronic aplastic anemia, in which condition the red bone-marrow was the only tissue at fault. There was a deficiency of the blood cells which were formed in the red bone-marrow, namely, the red corpuscles and the polymorphonuclear leucocytes. Recovery in these cases according to Parkinson are almost unknown. C. A. LANG.

THOMSON, JOHN: NOTE ON RECURRENT FUNCTIONAL MICROPSIA. (British Journal of Children's Diseases, January-March, 1919, p. 7.)

Recurrent functional micropsia is a trivial disturbance of vision which is not very rare in older children according to Thomson. Its presence is usually only discovered by questioning, as it does not cause any great distress. Sometimes, however, if it recurs frequently and lasts long at a time, it may give rise to considerable annoyance. More or less suddenly the child finds that the furniture and other objects in the room appear much smaller than usual, as if they are 3 or 4 times as far away as they really are—although their details are as clear, or clearer, than before. After a few minutes this passes off, and it sometimes seems to go sooner if an attempt is made to focus the sight on a near object, such as the hand. While the micropsia lasts it interferes with reading. There is no obvious cause for the onset of the symptom. Sometimes it comes on when the child wakens in the morning, sometimes in the evening when he is tired and sleepy, but it may begin at any time in the day; and it is not only when much eye work is being done that it appears. The author has known it to occur with a high degree of myopia, also with quite normal vision; with chronic dyspepsia and with apparently perfect digestion. It is not associated with headache and giddiness. It often begins about the tenth year and ceases altogether between 20 and 25, if not sooner; it may cease temporarily for months or years during childhood or adolescence, and then recur without any obvious cause. Thomson's explanation of its occurrence is that it depends on a passing relaxation of accommodation and may have some relation to a strained condition of the nervous system. C. A. LANG.

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ORIGINAL COMMUNICATIONS

PYLORIC STENOSIS OF INFANCY*

By Joseph S. Wall, M.D.
Washington, D. C.

The name pyloric stenosis presupposes a narrowing of the lower opening of the stomach due to that marked encroachment upon its caliber produced by hypertrophy, or to a temporary obstruction incident to spasm of the circular muscle. The confusion of former years relating to the nomenclature of conditions affecting the pylorus of infants might be cleared away by permitting to remain as a disease entity only the hypertrophic stenosis—for such is the form which predominates, which lends itself to effective treatment, and which causes loss of infant life through lack of recognition.

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*Read before the Medical Society of the District of Columbia.

The conflict of opinion as to the production of hypertrophic stenosis of the pylorus may well be put aside especially in view of the fact that a strong belief in the spasmodic theory would go far toward jeopardizing the life of an infant through the delay incident to the continuation of the so-called medical treatment directed toward the relief of a stenosis thought to be due to spasm alone. It may be said in passing, that it requires rather a vivid imagination to attribute a great, hard pyloric mass of muscle tissue, perhaps the size of an olive, to the effect of any species of gymnastic exercise which may have been indulged in throughout a brief period of 3 or 4 weeks. It would seem much more plausible to look upon the hypertrophic stenosis as a developmental aberration such as we find in the lingual frenum, or labial frenum, or in the redundant prepuce of the male infant. Undoubtedly the element of spasm comes into play at a certain stage of a pre-existant hypertrophy, not only spasm of the pyloric sphincter, but overaction of the stomach circular fibers as demonstrated by the peristaltic waves.

The form of pyloric stenosis of which we speak in the following summary is the hypertrophic variety.

Pylorospasm is seen not infrequently in infancy, producing mild projectile vomiting and weakling peristaltic waves. It probably occurs to more or less extent in all regurgitating babies. Moreover, physiologically, clonic sphincter contraction of the pyloric circle band is a normal mechanism of digestion, initiated, as has been shown by Serdjukow and Starling,[1] through the duodenal acid reflex; nor is there reason to believe that excessive overaction of this segment of the gastrointestinal tract should be less rare than violent peristalsis which is especially prone to occur in infancy.

From the standpoint of embryology, little light is thrown upon the development anomaly leading to hypertrophy of the pylorus. One might expect some congenital lesion at the pyloric junction should it be a place of development fusion such as the lower end of the esophagus or the upper extremity of the rectal pouch, both of which points at times show atresia or anomaly of development through imperfect fusion.[2] I have been able to discover but one developmental feature which in the intricacies of embryonic growth, may have a bearing upon the conditions productive of hyperplasia of the circular muscle at the pylorus—

namely, a temporary obturation of the lumen of the duodenum which is apparently a normal stage of evolution in the fetus at a very early period of growth. In embryos of 12-13 m.m., the lumen (of the duodenum) becomes obliterated by an overgrowth of the mucous membrane caudal to the ducts of the liver and pancreas. In embryos of about 15 m.m., however, the lumen reappears. It seems difficult to find a cause for this peculiar growth of the mucosa.[3] Whether or not the persistence of such an intestinal block beyond the period mentioned would lead to hypertrophy of the adjacent pyloric sphincter is within the realm of speculation. Well marked tumors of pyloric hypertrophy have been reported in the new-born as well as in infants born prematurely, which adds emphasis to the view that hypertrophic stenosis is a congenital defect.

Downes[4] believes "that the theory that best explains the sequence of events in the disease is that a true malformation is present at birth consisting of an abnormal thickening of the circular muscle of the pylorus, and that the effort necessary to force food through the narrowed and elongated pyloric lumen produces circulatory disturbances resulting in edema. As the food is increased in amount, and the muscular effort becomes greater, the lumen narrows down until finally at the tenth day or later it becomes more or less completely obliterated." Spasm, according to the view most largely held, is a superadded result and not the cause of the stenosis.

There has been an attempt recently to associate pyloric stenosis with enlargement of the thymus but sufficient observation on this point is still lacking. The condition is much more common in males than in females, occurring in a proportion of 7 or 8 to 1. This relation is inexplicable. It is a malady of remarkable constant "age incidence," so much so that age should be given a prominent place in the diagnostic complex. This chief symptom, vomiting, usually appears between the third and sixth week of life, while the ulterior signs and symptoms following in its wake and incident to loss of food, appear during, or, at the close of this period.

One purpose of the presentation of this subject is to make more emphatic by reiteration the striking fact that here is a disease of serious import which is met with almost always within a single and certain month of a baby's life—and so fixed is this "periodic law," as we might term it, that failure to recognize the condition becomes almost inexcusable.

The ailment is one that is most frequently met with in breast-fed infants, though it not rarely falls to the lot of the physician to be consulted when the child is upon the bottle and in late cases the infant may have run the gamut of every proprietary food known to exist. Most month old babies are still breast-fed,—hence the incidence of the disease among this group, but it may be added that the usual history reveals a sudden termination of maternal nursing—a calamity which cannot be magnified too greatly.

The baby is usually a vigorous and hearty infant at birth. It nurses well, thrives and prospers during the first 2 or 3 weeks. Its gain in weight is usually rapid and consecutive. The initial loss is made up at the proper time and a pound or more may be added to the birth weight.

Vomiting begins. The time of appearance of this sign is usually from the second to the fifth week, rarely it may begin as early as the tenth or twelfth day or be delayed beyond the sixth week. The extreme importance of the "vomiting incidence" cannot be overestimated. This sign occurs with enough definitiveness to be fixed in the mother's mind so that the actual day of beginning vomiting stands out distinctly in the history.

Next in importance to the "age incidence" of the vomiting is the character thereof. It is *not* regurgitation—a condition common to many breast nurslings, natures protest against too frequent and too bulky nursings. The vomiting of pyloric stenosis is large in amount. The time of occurrence, frequently during the act of nursing or shortly thereafter, is important. It is, or will become during the course of the disease, *forcible* and *projectile,* the contents of the stomach being catapulted across the bed or even across the room. It might with propriety be called "geyser vomiting"—for two particular reasons. Old Faithful in the Yellowstone erupts every 50 minutes. The stomach, blocked by a pyloric stenosis, erupts in equal abeyance to a periodic law every 120 or 180 minutes, according to the nursing schedule, and the spouting of stomach contents resembles the gushing explosion of a geyser. We have occasionally been within the range of this "geyser vomiting" and can testify that its "particle infection," as the hygienists talk of contagion, is often beyond the limit of 5 feet!

Vomiting takes place often and especially in the later stages of the disease, with every act of nursing. In some cases one or more feedings will be retained throughout the day and not infrequently such an event of apparent satisfaction to the mother will be followed by a post-nursing geyser eruption which causes her to state that "the baby vomited twice as much as she gave it in the bottle," the latter event predicated upon the usual unfortunate circumstances that the bottle, often filled with a proprietary food, has replaced the breast.

Vomiting "more than the baby takes" means simply the regurgitation of a feeding, plus the contents of retention of the previous one, the bulk of which, in bad cases, may equal in amount the quantity ingested. Often the vomiting abates during the night,—a rather silent tribute to long feeding intervals such as pertain during the night hours and which of late have become more popular during the daylight hours as well. After vomiting, the infant cries lustily for more food, unless, from neglect of recognition, the disease has so reduced the vitality of the baby that such remonstrance is impossible. Toward the later stages this bulky, geyser vomiting occurs whenever food is ingested, no matter whether it be mother's milk, goat's milk, condensed milk, or a proprietary food prepared with careful exactness according to the vicious formulas set forth on the labels of the containers.

A remarkable circumstance may be noted in the feeding history,—namely that a change of food for a day or two has been followed by an abatement of symptoms. Such an event is difficult of explanation but the result leads to temporary cheer for the mother and physician and ultimately to the undoing of the baby, if kaleidoscopic food changes are persisted in.

Other clinical signs and symptoms fall within one group, namely, that of progressive starvation. Some cases have a less pronounced course than others. In these, retention by the infant of a part or all of occasional feedings occurs; fecal stools persist; emaciation is less rapid and when obstruction is incomplete, recovery may ensue after many weeks or months of precarious existence, without operation and without even the administration of the so-called medical treatment. In most cases, however, gradual and later, rapid signs of dissolution occur as a result of lack of nutriment. Loss of weight of 3 or 4 ounces a day—later, even a half a pound—takes place. The body is reduced to that of a living skeleton if seen late in the disease. There is always obstinate constipation. Stools produced by stimulating enemata are small, dark, and just before death, resemble the tarry stools of meconium. There is scanty urine and dry skin because of lack of water retention.

In the most severe cases the symptoms increase with rather alarming rapidity, especially after an unfixed minimum weight loss point has been passed which varies with the vigor of the infant. Death may supervene after a period of 2 or 3 weeks from the onset of symptoms.

In the milder cases, already mentioned, the weight remains stationary or fluctuating within narrow limits, peristaltic waves persist, however, denoting obstruction, even when food retention on the part of the baby becomes the rule and not until several months have elapsed does gain in weight and disappearance of digestive signs denote beginning recovery. Even after apparent recovery (without operation) peristaltic waves may be discovered and a tumor felt until the close of the first year. The young son of a member of this society, treated by gastric lavage and measured feeding, displayed peristaltic waves at the age of 9 months.

The objective signs of pyloric stenosis, those that can usually be readily observed by the eye *if looked for*, are clear cut and characteristic. Only occasionally are they simulated by other affections which in most cases are those that in themselves demand operative treatment. Such instances will be mentioned under diagnosis. Chief of the objective signs is the occurrence of visible waves of *gastric peristalsis*. Under normal conditions a wave of peristalsis passes over the stomach once every 20 seconds, always toward the pylorus,—but such contractions are invisible. When obstruction at the pyloric opening occurs, they become distinctly visible and are always present if searched for under favorable conditions. These are: a physician who is not in a hurry, a good light, a well exposed abdomen (for they cannot be seen through the infant's bellyband), a quiet baby, and a stomach *which contains some food*. An empty stomach will not display waves.

The waves appear as spherical gas-like balls or miniature balloons under the left border of the ribs. They pass slowly and regularly toward the right—usually above the line of the umbilicus but even below this line in old standing cases with great gastric dilatation. The waves flatten out to disappear under the right costal margin. Often one wave is succeeded quickly by another so that two moving balls, with deep incisive features, are passing synchronously across the epigastrium like an hour-glass. Strong peristalsis is usually the precursor of projectile vomiting which frequently occurs while the waves are being watched.

A single momentary inspection of the abdomen will not suffice to exclude the presence of gastric peristalsis. Repeated examinations should be made for periods lasting 15 or 20 minutes under conditions, as pointed out, favorable to the development of this important sign, which, almost without reservation, may be considered pathognomonic of hypertrophic stenosis of the pylorus. Of almost equal importance is gastric retention. This sign is elicited by the withdrawal of what remains of a measured feeding, 2 or 3 hours after its ingestion. The test meal should be of breast milk, malted or condensed milk and not of cow's milk, the coagulation of the latter in large curds interfering with the success of the experiment. Some little of the last feeding may have passed the pylorus but the degree of obstruction bears a constant relation to the amount of residue determined by gastric suction

The apparatus to be used may consist of a large pipette affixed to the stomach tube or an air-tight bottle fitted with 2 tubes through the cork.

Of enormous importance when present, but often unfortunately wanting, is the pyloric tumor. Ability to palpate a tumor is largely the result of experience. It is possible that the tumor may vary in size to some extent as well as in apparent consistency, according to the amount of pylorospasm present. The tumor is felt as a small movable body the size of a peanut or small olive, an inch or more to the right of the umbilicus. A tumor may *not* be felt if it should lie beneath the right border of the ribs, nor should the presence of a tumor be made the sina qua non of diagnosis.

Ordinarily the signs and symptoms of hypertrophic stenosis of the pylorus are of such conclusive prominence that a diagnosis is made with no difficulty. As Richter[5] says—"there are no borderline cases."

There are especially well marked points of diagnostic importance which have been ascribed relative values by different observers. Our experience is much in accord with that of others in the evaluation of these signs.

1. *The History.* By this means alone, a tentative diagnosis may be made even before examination of the baby. The history of an infant but 2 or 3 weeks of age comprises in compass but a brief period of life and one during which the baby receives practically continuous observation and supervision by both mother and nurse. Therefore, in a period measured by hours and days instead of months and years, an exact record of events is obtained without difficulty. The "latent period" of well being and progress just after birth; the rather fixed and constant genesis of vomiting, in most cases assigned to a certain day of life; the persistence of vomiting resulting in the dire calamity of weaning; the substitution of every other known food without abatement of symptoms; emaciation and constipation;—these form a diagnostic picture of primary importance.

2. *The "Age Incidence."* The second half of the first month of life. There is no disease in the category of human ills, which possesses an age period as exact and suggestive as the one under discussion.

3. *Gastric Peristalsis.* The deep, incisive waves of stomach contracture are pathognomonic of pyloric block and in the great majority of instances, such block is due to hypertrophy of the pylorus. It *may* be due to other causes, one of which fell to our lot to observe, in which a jib-like peritoneal band passing backward from the under surface of the liver obstructed the lower end of the stomach sufficiently to produce marked peristalsis and almost constant projectile vomiting.

Poorly marked, feeble waves of gastric peristalsis may be seen in conditions other than hypertrophy, even in pylorospasm. They are not deep, nor rhythmic, nor constant in formation.

Still[6] records a case simulating the waves of pyloric stenosis, in which a transposed transverse colon, with obstruction, was responsible for visible peristalsis from left to right.

Downes[4] reports obstruction by peritoneal bands, as was found in one of our own cases, causing sufficient embarrassment of stomach motility to produce visible gastric peristalsis. Holt[7] records bands of tuberculous peritonitis causing the same mistakes in diagnosis. Downes further reports a case in which a small tumor, originating in the mucosa of the pylorus, produced obstructive symptoms. The infant was operated upon and a rather small tumor of the circular fibers relieved by the Rammstedt method. The child continued to vomit and died after 18 hours. The tumor causing the obstruction was found at necropsy.

Even, as has been intimated, if violent gastric peristalsis exist, which is not due to an hypertrophied pylorus, such an abnormality is significant of a degree of intestinal obstruction which demands surgical intervention as much as does a strangulated hernia.

4. *Tumor.* One should look for tumor both during the period of active peristalsis, when the stomach contains food and the pyloric circle is in active tonicity, as well as during periods of repose with a stomach emptied by gastric suction. Some advise a few whiffs of ethyl chloride or ether to aid in its detection. Absence of tumor does not exclude an hypertrophied pylorus nor should such absence be given great prominence in arriving at a diagnosis.

5. *Gastric Retention.* This is accorded a relatively early position in the scale of diagnostic signs by Holt. In our opinion its importance is influenced by the technique employed in utilizing this measure of diagnosis, and in the degree of accuracy displayed by the nurse during the feeding intervals. Improper siphonage of the gastric contents, unobserved vomiting, or employment of unsuitable test foods may vitiate the relative importance of the evidence given by gastric suction.

Duodenal bougies for actual measurement of the patency of the pylorus have been employed by Howell[8] for diagnostic purposes, although Richter[5] lays stress upon overestimating the degree of pyloric obstruction by sounding.

Obsolete and discarded methods of diagnostic exploration include the use of carmine meals and radiographic examination. Holt and Richter have both lost infants from the delay and increase of pyloric obstruction incident to bismuth radiographic tests. Nor does the radiograph throw any light upon the condition in any event. Bismuth cannot be caught in the act of passing the pylorus, while gastric retention is even better mapped out by simple gastric suction.

If the possibility of pyloric stenosis be borne in mind; if the fact also be remembered that mother's milk is the least likely of all foods to *disagree* with the baby in these first weeks of life; if bellybands were discarded with the dropping of the cord for the protection of which they were no doubt invented;—then, hypertrophy of the pylorus would be early and always recognized and babies lives would not be jeopardized or lost through failure of recognition.

For many years there were two methods of treatment in vogue: one was the so-called medical treatment consisting of stomach washing and careful feeding; the other, the surgical treatment which comprises several procedures such as divulsion, pyloroplasty, and posterior gastroenterostomy,—the latter being the operation mostly used for the relief of the obstructed pylorus. Until quite recent years the high mortality accompanying all surgical procedures reacted in favor of the more conservative non-operative measures. The evolution of surgical preference has been largely akin to the moulding of sentiment regarding the proper treatment of acute appendicitis. Once the diagnosis of hypertrophic stenosis is made, unless exceptional circumstances prevail, such as mildness of symptoms or their amelioration under dietetic restrictions; unusual hospital facilities for the medical handling of the case, stationary or slightly fluctuating weight,—operation is indicated.

There are still some experienced pediatricians who favor prolonged medical treatment before the intervention of surgery is asked. Their cases, however, are placed within well-equipped hospitals, where there is abundance of breast milk secured through resident wet-nurses so that measured feeding and lavage may be carried out without difficulty, but such indirect foster-mother feeding is available to but few infants in this or any community. Sauer[9] has reported encouraging results from the feeding of thick farina mixtures in cases of pyloric stenosis. The preparation of such feedings must be accompanied by careful detail and the results he has obtained warrant the trial of this method of feeding at least in that group of cases in which operation is not immediately demanded because of the depleted state of the infant.

The operative treatment has become the plan of election largely through the development by Downes of New York, and others, of the Rammstedt pylorotomy operation.

The difficulties of a gastroenterostomy upon a baby but a few days old with a tiny stomach and a still smaller jejunum, already collapsed until its size is no larger than a lead pencil, can be appreciated by those who have performed or witnessed such an operation.

Quite a number of cases subjected to gastroenterostomy have been collected by Holt showing the persistence of the tumor for years afterwards as demonstrated by subsequent operation or necropsy. The tumor by this method was merely sidetracked but not ablated. Yet these cases, should they survive the ordeal of the operation, did well nor were there evidences in later life of nutritional disturbances from the obvious alteration in the normal mechanical stomach processes.

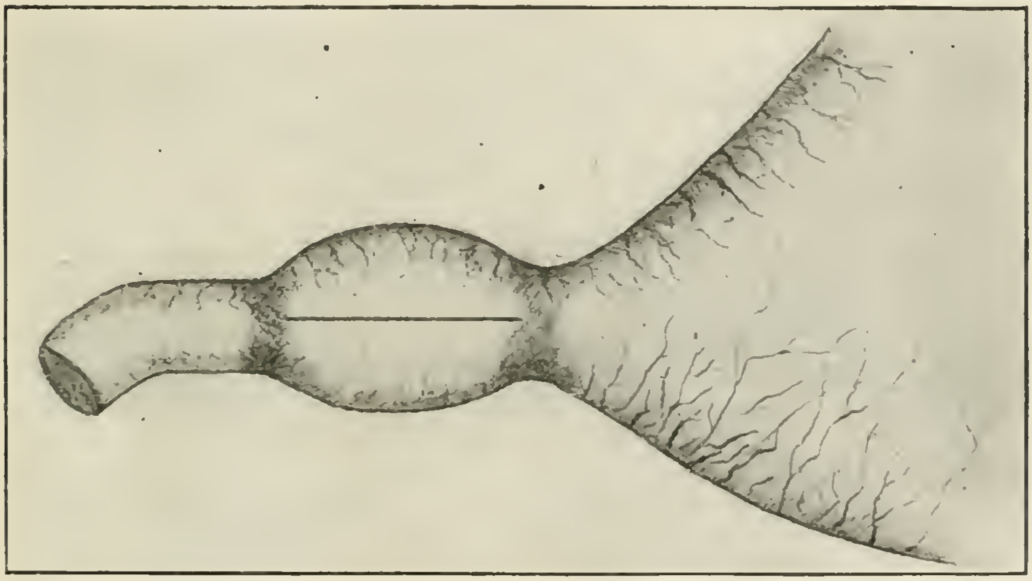

FIG. 1. RAMMSTEDT OPERATION—INCISION

In 1913, Rammstedt of Munster reported a successful operation by his method of pylorotomy and strange to relate there is no record that he ever performed another! (Holt)

Since January, 1915, Holt[7] records this procedure as the one exclusively utilized in the Babies' Hospital of New York, with a mortality in 1916 of 15.3 per cent.

Undoubtedly still further reduction of mortality records will obtain if two factors become accentuated in the future. One is the early recognition by physicians of the symptoms of pyloric stenosis; the second, is the development of a rapid and skilful technique by the surgeon through the experience in operating.

The limits of this paper prevent an extensive description of the Rammstedt operation. It may be said, however, that strict adherence to the most exacting detail, especially of after-treatment, which is the physicians' share in the responsibility, will be necessary to secure satisfactory results.

The operation is performed under ether anesthesia through a right rectus incision, into which the pylorus is drawn by the thumb and forefinger of the left hand. While thus held, an incision about ¾ of an inch or more in length is made in the long axis of the bowel through the enlarged circular muscle fibers down to the mucous membrane which bulges into the wound forming a "hernia mucosæ."

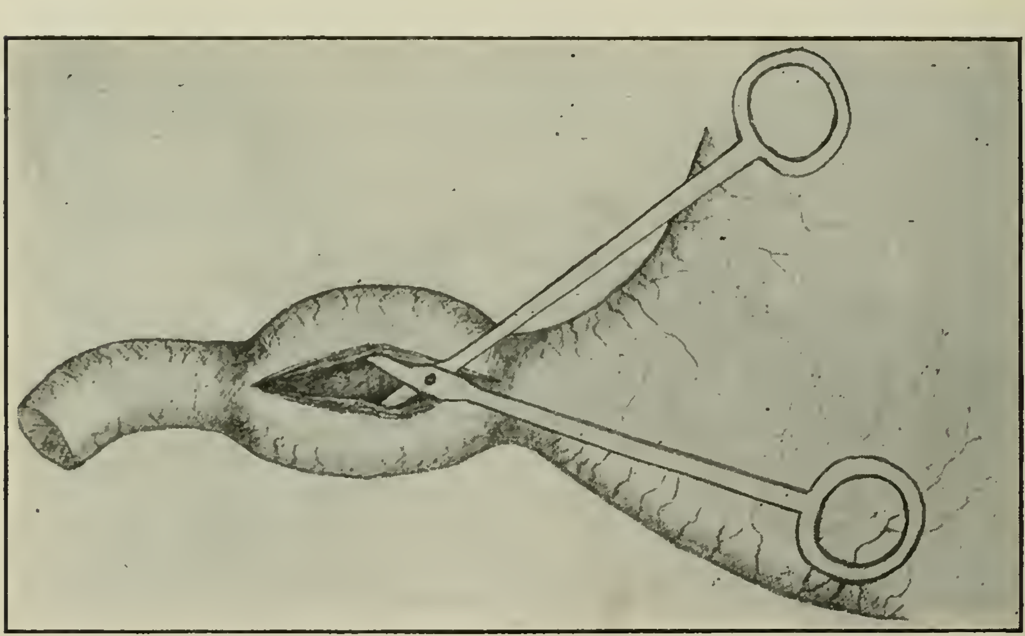

FIG. 2. RAMMSTEDT OPERATION—EXPOSURE OF SUBMUCOSA

The incision should be completed first toward the stomach where the transition from the enlarged fibers to the normal coats of the stomach is more gradual than at the duodenal end. Both extremities of the wound require most careful incision to avoid nicking the mucous membrane and entering the bowel—an event that is made evident by the immediate escape of gas and bowel contents. The pylorus bleeds but slightly if the wound is made in the "linea albae" of the tumor. The stomach is dropped back into the abdomen and the wound in the walls closed. The simplicity of the operation is shown in the accompanying diagrams.

Attention might be called to the frequency of stitch-hole abscesses and to the actual parting of the abdominal wound following upon the operation. The latter has happened twice in cases coming under our observation. In one case resuturing resulted in recovery; the other baby died, but probably from contributary causes, the infant having a large congenital hydronephrosis.

The post-operative treatment of these cases is covered with accuracy of detail by Morgan[10] and it has been our custom to provide the hospital interne, unfamiliar with their care, with a copy of this article for his guidance.

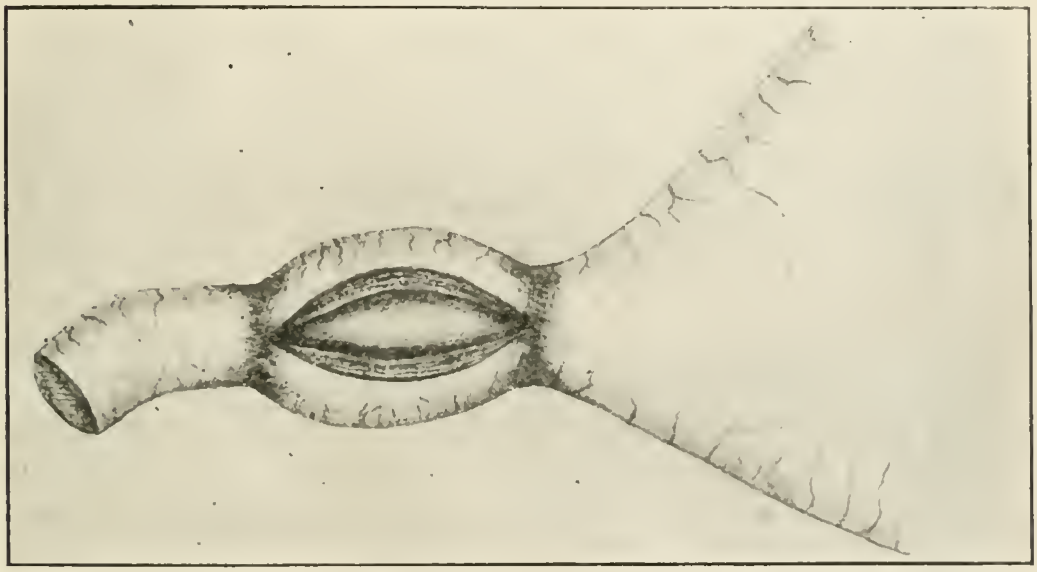

FIG. 3. RAMMSTEDT OPERATION—COMPLETED

It has been our experience to meet with several cases of post-operative hyperpyrexia due probably to prolonged retention of the cotton wadding coverings of the extremities as such temperatures rapidly subsided when the heat-retaining layers were removed.

Regarding what might be called the "cosmetic" results of the Rammstedt operation, Ransohoff and Woolley[11] report a pathological study of a pylorus made 6 months after operation which showed the following: "It appears that the surgical incision permitted the muscular coats of the tissue to retract and the opening to gape, and that subsequently the space was filled with organized tissues, which in its fully developed state, was fibrous tissue. This had formed a typical linear contracted scar. It seems that during the healing of the wound the pyloric orifice became dilated and then remained so, and thereafter performed its function in an acceptable manner. This is an anatomic proof of the perfect efficiency of this operation. It shows also the futility of the numerous modifications, which only complicate the operation without in the least improving it. Another interesting feature was the disappearance of the tumor mass, which was plainly shown at the operation."

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STATUS LYMPHATICUS. (Proc. Roy. Soc. Med., Sect. Study Dis. Child, 1917, x, 133). H. C. Cameron suggests that the lymphoid overgrowth so commonly found postmortem in children is no more than an enlargement from the irritation of chronic catarrh in the corresponding mucous membranes. Such children during life show evidence of faulty nutrition or infection of all epithelial structures, hair, skin, teeth, conjunctiva, and the mucous membranes of respiratory and intestinal tracts. There is usually present a characteristic wateriness of the tissues, which is dependent to some extent upon excessive carbohydrate feeding, which is a main cause of the vulnerability to infection. Local treatment of the catarrhs alone is likely to be inefficacious, and must be accompanied by a systematic attempt to bring about the process of dehydration and improve the nutrition of the tissues. The status catarrhalis in the sense defined is a predisposing cause of rheumatism and tuberculosis, and carries with it a liability to sudden death at the onset of virulent infections, such as pneumococcal infections, measles, or diphtheria.—*American Journal of Obstetrics.*

APPENDICITIS IN CHILDREN*

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The problem of diagnosis in children is in many ways even more difficult than that in adults. The history must be obtained largely from mothers who may be ignorant or careless, or both. Inaccuracies are all too common. Physical examination, on the other hand, is in some respects easier than in adults, the field is smaller and the probabilities much fewer. The tissues, moreover, are more nearly normal, not degenerated by excesses in eating and drinking, child-bearing, or chronic disease. The reaction of normal tissues to carefully exerted pressure is our only real guide in diagnosis. It is a matter of no mean skill, however, to make a thorough physical examination of an ailing and fretful child. Extreme patience and gentleness are absolutely essential. Nothing is so sure to defeat the object of the examination as rough handling, gruffness, or digging a finger nail into a sensitive skin. Palpation in a warm bath may even be necessary in extremely nervous children.

The frequency of appendicitis in childhood is surely much underestimated. Many probably die under other diagnoses, others recover for the time and fall into the class of chronic appendicitis in adult years. It is certainly unusual to see a pathological appendix in an infant under 1 year, but not at all uncommon to find decided changes in the appendix of older children who give no history of definite attacks. The correct diagnosis is seldom made, and operation for chronic, interval, or mild cases of appendicitis during childhood is exceptional.

The mortality of acute appendicitis in children is considerably higher than that in adults. This is generally attributed to a lessened resistance to infection in children and to the more rapid development of necrosis and peritonitis, more frequently of a spreading type. That children have less resistance to infection than adults may be true, especially in lymphoid organs such as the tonsils, the lymph nodes, and the appendix. More accurately stated, such tissues in the young are more liable to acute infection. This would imply that acute appendicitis is more common in children than in adults and I believe this to be true. Whether or not the development of necrosis and peritonitis is more rapid in childhood is entirely another question. It is not unusual to see complete necrosis of the appendix in adults within 24 hours of the onset of symptoms. The process cannot be much more rapid than that in children. Possibly the tougher adult tissues, even though necrotic, do not perforate and cause gross soiling of the peritoneum so quickly as in children, but there surely can only be a few hours difference. The essential point is, that necrosis occurs rapidly in the acute cases that *are* diagnosed.

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*From New York Hospital and St. Mary's Free Hospital for Children.

From the fact above stated, that pathological changes are not uncommon in grown children in whom no history of acute attacks is obtained, one of 2 things may be deduced—either there were no acute attacks or they were not diagnosed. It is far more probable that there were acute attacks of a mild nature called "bilious spells," constipation, worms, teething, indigestion, etc. These I firmly believe correspond to the mild or moderately severe attacks in adults which are now commonly recognized and cured by operation. This readily explains the greater mortality in children, as, generally speaking, only the seriously ill are diagnosed and operated upon. This was true of adults also 20 years ago and the results would about compare with those in children today. General peritonitis, huge abscesses, ileus, etc., were the regular occurrences at that time, as, to a considerable degree, they are still in children.

The following case histories were taken as examples, partly because they were private cases, in which intelligent parents and children were able to give exceptionally careful and complete histories and partly because they serve well to illustrate the progress of the disease in healthy young children. They all occurred during the past year.

Case I. Boy of 4 years, son of physician. An exceptionally bright, active, nervous, but healthy child. No previous illness except tonsilitis, for which tonsilectomy had been performed with success. No previous abdominal symptoms. Moderate constipation at times.

Illness began on day previous to operation. No special symptoms, but he felt uncomfortable and refused his lunch. Ate a light supper and slept well. The following day he had diffuse abdominal pain, a temperature by rectum of 99° F. There was no vomiting. The physical examination revealed only the slightest voluntary tightening of the right rectus on deep palpation. Leucocytes and differential count were normal.

The child seemed rather apprehensive and stated clearly that he had pain—pointing to the umbilical and right iliac regions. A consultation was held in the afternoon, 30 hours after onset, with a surgeon especially expert in children. No further signs nor symptoms developed and it was considered safe to wait a few hours at least. In the evening the temperature was 100° F. and there was possibly a little involuntary rigidity of the right lower quadrant. Leucocytes and differential count again were normal. Mainly because of the child's insistence that he had pain it was decided to operate. The appendix was removed at 10 P. M. at the Babies' Hospital and found quite necrotic for the distal third. It lay on the pelvic brim, unprotected by adhesions, and would undoubtedly have ruptured during the night. No drain was necessary and convalescence was uninterrupted.

This case in a general hospital service would surely have been classed as a 12 hour appendix, even if the operation were performed as early as it was. Only the child's exceptional intelligence guided us to the correct diagnosis in time to forestall a serious peritonitis.

CASE II. Girl of 8, exceptionally large, stout and vigorous. No past history of any bearing, except occasional stomach upsets. No previous attacks. Moderate constipation. Onset day before operation, with grumbling pain in region of navel. No definite signs nor symptoms. Slept well and felt fairly well next morning. Some pain and soreness in right iliac region. No nausea nor vomiting. Bowels moved to enema. Temperature per rectum 100° F. Seen at 10 A. M. in consultation. The child was remarkably well developed. The only physical signs were indefinite—a slight sensitiveness in the right lower quadrant with some voluntary rigidity. Examination rather difficult because of excessive fat.

On the right knee was a quite extensive recent abrasion with mild infection. The leucocytes were 16,000, with 76% polymorphonuclears. I was inclined to believe the condition one of lymphadenitis, although the femoral nodes were not tender, and advised waiting a few hours. The diagnosis of appendicitis was entertained as a possibility. Two hours later there was a chill.

The temperature rose to 104° F. Operation at 3 P. M. in the New York Hospital revealed a completely necrotic appendix. There were no adhesions. No perforation had occurred. No drainage. Convalescence satisfactory with moderate febrile reaction for several days.

This would generally be classed as a 12 hour case, but the girl was very intelligent and gave a distinct history of pain during the whole of the preceding day. Although necrosis was nearly complete there was no perforation and no fibrinous deposit. Incidentally it teaches that the obvious lesion is not always the important one.

CASE III. Girl of 3 years. Seen in the Babies' Hospital in consultation. No past history of any importance except an attack of bronchitis a month previously—treated in the country with apparent recovery.

For a week there had been continuous vomiting and no fecal movements, although vigorous measures had been used. The consultant saw the child for the first time on the day of admission and diagnosed acute obstruction, possibly from appendicitis. My opinion inclined toward a tuberculous peritonitis with obstruction. The child was in remarkably good condition considering the week of vomiting and obstipation. Her parents stated that she had never been ill before and was exceptionally vigorous for her years. Nothing could be made out by physical examination, because of distention. Operation revealed a most extensive organized plastic peritonitis, firmest in the right iliac region.

Here a few yellowish nodules were taken to be foci of tuberculosis. Bleeding was profuse, the serosa tore repeatedly and the search for the seat of obstruction had to be abandoned. Post operative shock was extreme, but the child rallied and lived nearly 12 hours. Post mortem showed an appendix necrotic at the tip, a chronic abscess and immensely strong, dense, old adhesions throughout the right side of the abdomen. There was no tuberculosis. The bronchitis of a month previous may have masked an extensive peritonitis. Certainly the process was a month old.

CASE IV. Boy of 20 months, robust and healthy. Onset was sudden with vomiting and colicky pain, moderate rise in temperature. A physician ordered castor oil and declined to call on the following day. On the third day the temperature was 102° F. per rectum. The abdomen was distended, tender and rigid, and a mass could be felt in the right inguinal fossa. Immediate operation at St. Mary's Free Hospital for Children revealed a necrotic, perforated appendix, with abscess and local peritonitis. Recovery was uneventful.

In this case careful physical examination would have revealed the true condition and prevented an extremely dangerous peritoneal involvement.

CASE V. Girl of 12 years, perfectly well until 24 hours before operation. Onset sudden, following a hearty meal, with vomiting and pain about the umbilicus. Her brother, a physician, suspected appendicitis, but the symptoms and signs were too vague.

The following day there was moderate pain, gradually settling in the right iliac fossa. Slight fever, moderate tenderness and voluntary rigidity were present. The leucocytes were 20,000, and the differential count 88%. Operation in the Harlem Hospital revealed nearly complete necrosis of the appendix, which was covered with fibrin, but not perforated. A fecal concretion was present. No drainage was needed. Recovery was uneventful.

In this case there was absolutely no history of previous abdominal complaint, in spite of the presence of a fecal concretion. Later the child admitted having had a mild colic of an hour's duration about a month previous to the present attack.

The following tables of cases are from the first surgical (Cornell) division of the New York Hospital and from St. Mary's Free Hospital for Children.

I am greatly indebted to the attending surgeons of these 2 services for their courtesy in allowing the publication of the data and to Dr. Gregor of the New York Hospital and Dr. Sheppard of St. Mary's for their valued assistance in preparing the tables.

TABLE I

NEW YORK HOSPITAL, FIRST OR CORNELL DIVISION

From February, 1913, to April, 1918, inclusive. Children under 15 years of age:

Total number of cases	224
Chronic cases	58
Acute cases	166
Deaths (all in acute cases)	7
Percentage of total cases died	3.1%
Percentage of acute cases died	4.2%

TABLE II

ST. MARY'S FREE HOSPITAL FOR CHILDREN

Report for years 1912-1918, inclusive:

Total number of cases	200
Deaths (all in acute cases)	8
Percentage of total cases died.........	4%

DURATION OF ILLNESS IN FATAL CASES, NEW YORK HOSPITAL

Least, 2 days.
Greatest, 15 days.
Average, 4⅔ days.

DURATION OF ILLNESS IN FATAL CASES, ST. MARY'S.

Least, 2 days.
Greatest, 9 days.
Average, 5 days.

AGE OF FATAL CASES, NEW YORK HOSPITAL, IN YEARS

9, 8, 11, 4, 10, 10, 9, 11.

AGE OF FATAL CASES, ST. MARY'S, IN YEARS

5, 1, 12, 3, 7, 2, 7, 6.

It will be seen from these tables that the mortality is fairly high, but when one considers the severity of the lesions it is doubtful if adults would give much, if any, more favorable results. Many of our acute cases in adults are well within the 48-hour period, while in children the average *known* period is over 4 days. The time of almost complete safety, within the first 24 hours, has not been once attained in our hospital records, in children, so far as my personal recollection goes.

The cause for delay in operation is unknown, but from a fairly large experience I feel sure a great deal of the blame rests with the parents, partly because mild symptoms do not induce them to call a physician, and partly bcause of a dislike, natural enough, to leave their children in hospitals. That some portion of the blame rests with the physician for lack of care in making an accurate diagnosis and again for procrastination in urging operation, is undoubtedly true. Failure to make a rectal examination is one of the most common faults of us all, and much valuable information is thereby lost. One word more as to the dangers of operation. A warning was issued recently by one of our most prominent pathologists about operating upon cases of acute appendicitis of mild degree, in children, who might possibly be subject to status lymphaticus. Many of these appendices show only a considerable degree of lymphoid hyperplasia with slight necrosis of the follicles and he considers operation unnecessary and unwise. He admits that such status cases are peculiarly liable to severe infection and show little resistance.

In reply we can only state our belief that many lives would be saved every year if only early operation were performed oftener, while the cases are yet mild. We have never yet seen a "status" death at St. Mary's, in a clinic of nearly 2,000 operations yearly, whereas death from delay in operation has been only too frequent.

SUMMARY AND CONCLUSION

1. Appendicitis in children is probably much more common than is generally recognized.
2. The reason for the apparent higher mortality in children is that, in general, only the more serious cases are operated upon.
3. The progress of the disease is little, if any, more rapid in children than in adults.
4. Earlier diagnosis and operation in milder cases would probably halve the mortality, as it has in adults.

Salts in Green Vegetables (Journal of Biological Chemistry, August, 1918). Mr. H. G. McClugage and L. B. Mendel have carried out metabolism experiments in which they have observed the intake and output of nitrogen, calcium and magnesium, in order to study the suitability of green vegetables as a source of inorganic salts. They find that in dogs, the calcium in carrots and in spinach is not as well utilized as that in milk or in calcium carbonate. They also note that there is a loss of nitrogen when carrots and spinach are added to a diet which has been formerly satisfactory. The authors raise doubts as to the efficacy of the addition of green vegetables to the diet of young infants. As a source of calcium, these bodies are inferior to calcium carbonate of milk—*Medical Journal of Australia.*

INFLUENZA AND BRONCHOPNEUMONIA IN CHILDREN*

By Archibald D. Smith, B.A., M.D., F.A.C.P.

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Owing to the war conditions, with consequent lack of pathological facilities, and scarcity of internes, the following cases are reported from the clinical standpoint, rather than the laboratory standpoint.

Included in this group were 14 cases of influenza, 9 cases of influenza and bronchopneumonia, 7 cases of bronchopneumonia in which no history of influenza could be obtained, and 2 cases of lobar pneumonia, making a total of 32 cases.

If we attempt to define influenza, we are struck with the difficulty of the attempt. The following definition is offered as a ground work, capable of further addition: Influenza is a disease of endemic, epidemic, and, at times, pandemic character, attacking all ages, but preferably the young adult, the main features of which are general toxemia with prostration, with special bacterial localization in the respiratory, nervous, or gastrointestinal systems.

According to W. L. Somerset, M.D., authentic accounts of this disease date from about 1500 A. D., and since that date there have been about 90 epidemics. In New York City the epidemic of December, 1889, and January and February, 1890, is remembered by many to-day. Another epidemic came in March, 1891, and since that time the disease has been endemic here, until in September, October and November, 1918, came another epidemic with a toll of 10,886 deaths.

The age of the 14 influenza patients in our series varied between 9 months and 9 years, being about evenly divided between the two extremes. The individual condition seemed to have little bearing on the development of the disease, as the robust, well developed child was present in equal numbers with the thin, under nourished child, or malnutrition baby. As far as sex went the division was about equal, 8 males, and 6 females.

Clinically the patients can be divided into 3 groups:

1. Temperature elevation with minor symptoms. There were 2 patients in this group, aged 17 months, and 4 years.

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*Brooklyn Hospital Series. Read before The Brooklyn Hospital Club, March 3, 1919.

2. Temperature elevation with vomiting as the main symptom. There were 3 patients in this group, aged 10 months, 3 years, and 8 years.

3. Temperature elevation with cough or coryza as the main symptom. There were 9 patients in this group, aged 9 months, 1 year, 19 months, 21 months, 2 years, 2 years, 4 years, 5 years, and 9 years.

Individual symptoms were: chilliness in 1; malaise in 2; fever in 14; nasal discharge in 5; anorexia in 1; flatulence in 1; headache in 5; cough in 9; cyanosis in 1; conjunctival suffusion with discharge in 2; pain in back in 2; pain in chest in 2; crying continuously in 2; pain in legs in 1; sore throat in 1.

Physical examination showed that the children were ill, prostration was marked, pulse rapid, tongue heavily coated and white, and sometimes brown—a typical typhoid tongue—and there were medium moist râles or dry râles in 7 of the patients with cough. In 2 patients, with distressing cough, no râles were heard. That the little patients were some of them very ill is shown by the fact that on 8 of the 14 charts a note was made reporting them to the office, seriously ill. And it was not always the patients with the highest temperatures who were the sickest. One patient with a temperature that never went above 101°, and most of the time varied between 99° and 100.5° was very ill for 3 days. The onset was given in the history as 2 days to 2 weeks before admission, and taking this onset into consideration the course of the disease varied from 5 days to 3 weeks, making an average duration of about 9 days.

The complications were: otitis media in 2 cases; nose bleed in 2 cases; tympanites in 1 case; furunculosis in 1 case; cyanosis in 1 case; bradycardia in 1 case during convalescence. All of the 14 cases recovered, so our mortality record happens to be very good.

All of the patients received castor oil on admission. Ten of the 14 received influenza combined vaccine (Mulford). It was given in small doses, 1/10 c.c. of the D strength (120,000,000 to the dose; 10.000,000 influenza, 40,000,000. staph. alb., 40,000,000. Staph. aureus., 10,000,000 pneumococcus, 10,000,000 streptococcus, and 10.000.000. micrococcus catarrhalis.) If necessary it was repeated on the first, second or third day, doubling the dose if no reaction. In one case the temperature fell to normal within 24 hours after the vaccine. This might have been coincidence, but as I have seen the same thing happen on several occasions, I am convinced that the vaccine will do it. I believe that the vaccine helped in the majority of the cases, and there were no bad effects from its use. Redness and tenderness of the arm around the site of injection was usually present; in one case the redness was 3 inches in diameter, with what appeared to be a slight additional rise in temperature, followed by a prompt return to average temperature and then progressively lower. In those cases where the local reaction was marked I believe that the immune bodies in the blood were low, and that it is cases of this kind that need the vaccine most.

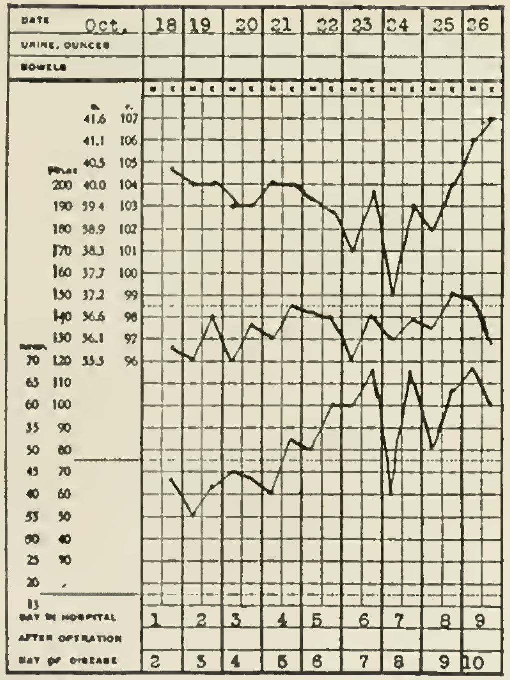
The furunculosis case was found to be due to the staphylococcus aureus, and an autogenous vaccine was made containing 500,000,000. to the c.c. The furunculosis cleared promptly under this treatment.

As for the other treatment high colonic irrigation was used in 2 cases; tincture of digitalis was used in 4 cases; aspirin, salol and phenacetin was used in 4 cases; caffein in one case; camphor in oil in 4 cases; ammonium iodide and ammonium chloride in 3 cases; creosote carbonate in 2 cases; spirits of nitrous ether in one case. My preference for stimulation is camphor in oil and digalen hypodermatically. Creosote carbonate by mouth I think has a beneficial effect on the intestinal tract and on the respiratory tract.

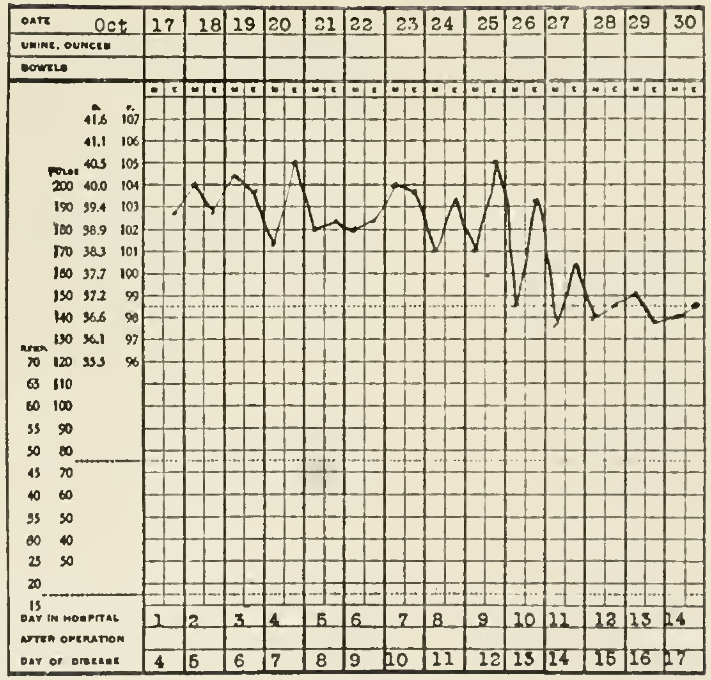
Influenza and Bronchopneumonia. In the 9 cases in this group the onset was from 2 days to 3 weeks before admission to the hospital. The age of the patients varied from 8 months to 8 years. The mortality was one in 9 cases or 11%. The main symptoms were: pain in head, back and legs in 2 cases; cough in 9 cases; coryza in 5 cases; dyspnea in 5 cases; irritability and crying in 2 cases; chills in 1 case; drowsiness in 1 case; cyanosis in 2 cases; vomiting in 2 cases.

The consolidation was noted on both sides in 2 cases, one of them the fatal case. In 2 cases it was in the right lower lobe posteriorly. In 4 cases it was in the left lower lobe posteriorly. In 1 case in the right upper lobe anteriorly.

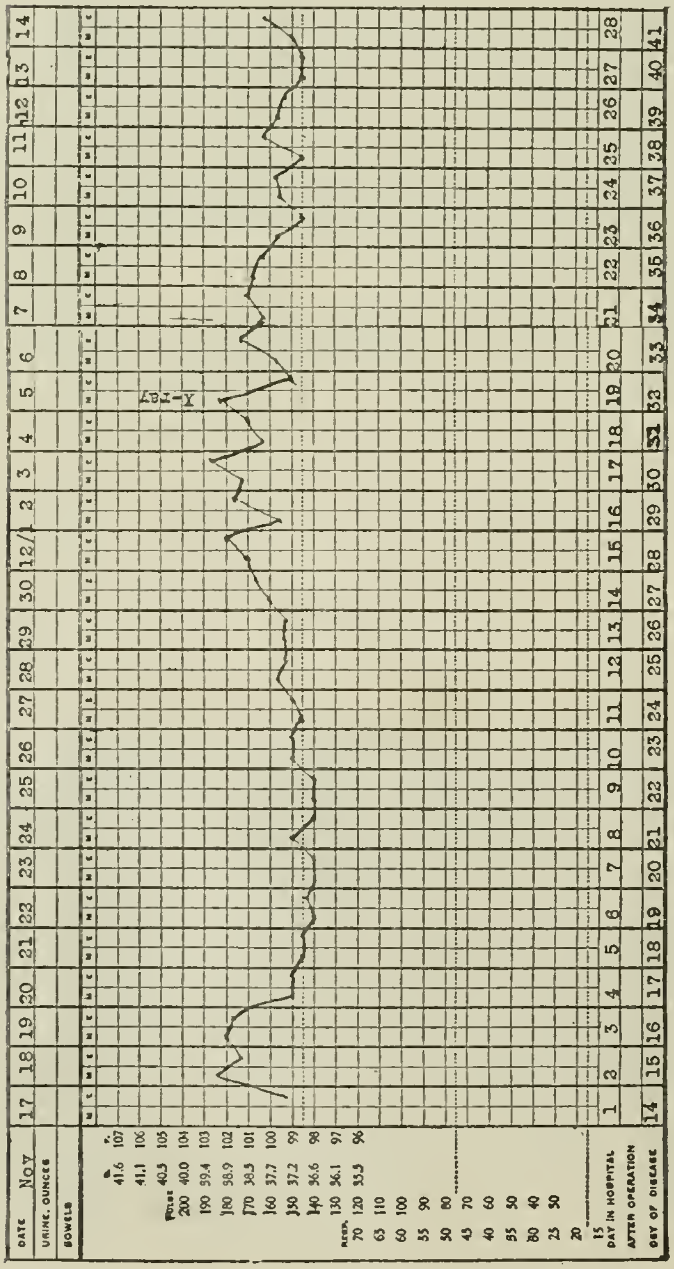
In one patient in this group a swab from the throat was cul-



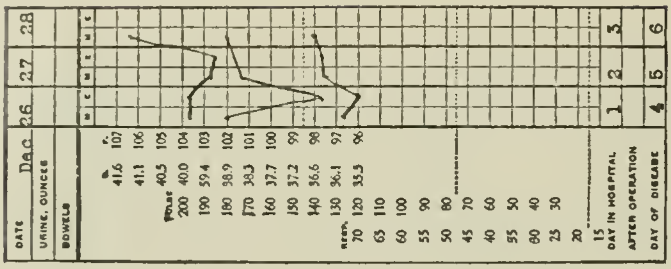
M.A., 2 years, 9 months, influenza and bronchopneumonia. Death on 10th day of illness. Both lungs consolidated.



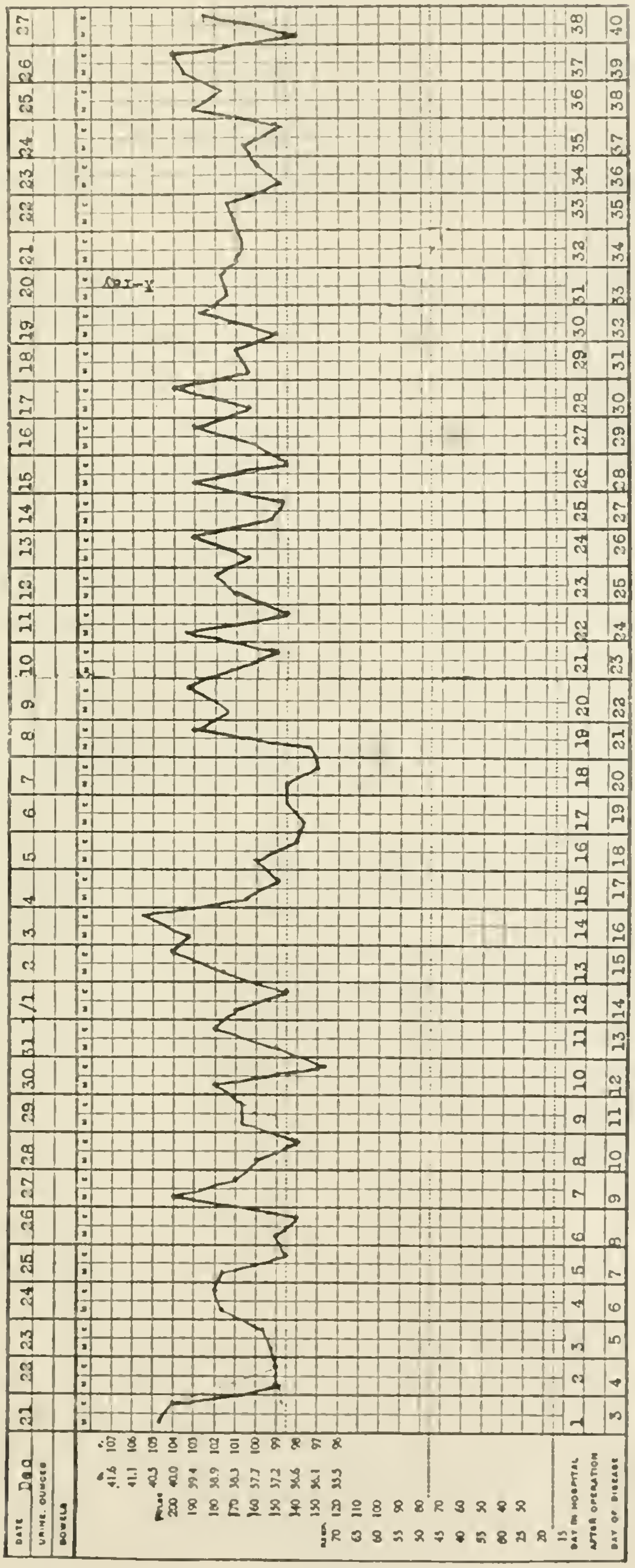
A.D., 4 years, influenza. Typical temperature chart, temperature remaining normal after 15th day of illness.



E.S., 9 months, bronchopneumonia. Ill 2 weeks before admission. Consolidation right side, axillary line, persisted in spite of normal temperature. X-ray on 32nd day of illness negative.



H.T., 10 months, bronchopneumonia. Death on 6th day of illness. Both lungs consolidated.



J.S., 14 months, bronchopneumonia. Consolidation right side, axillary line. Temperature persisting, x-ray on 33rd day of illness showed infiltration hilus right lung. von Pirquet negative.

tured and revealed micrococcus catarrhlis, and staphylococcus, but no influenza bacilli.

Bronchopneumonia, without History of Influenza. In this group there were 7 cases, whose ages varied from 9 months to 9 years. The onset of the illness varied from 2 days to 2 weeks before admission to the hospital. The mortality was 1 in 7, or 14%.

The symptoms were the same as in the previous group, except there was no complaint of pain in the head, back or legs, vomiting was persistent in 4 of the cases, there was a mucopurulent discharge from the eyes in 1 case, and there was diarrhea with green stools in 1 case. Meningismus was present in 2 cases. Lumbar puncture was negative in 1 of the 2 cases.

The consolidation was noted on both sides in 3 of the 7 cases, one of them being the fatal case. In 2 cases it was in the right lower lobe posteriorly, and in 2 cases in the left lower lobe posteriorly. The blood in one case showed, white blood cells, 12,000, polymorphonuclears, 68%, lymphocytes, 32%.

Lobar Pneumonia. In this group were 2 cases, aged 19 months,and 2 years. In both these cases the right lower lobe was consolidated. Both recovered, one of them after having repeated convulsions.

The treatment consisted of creosote carbonate, castor oil on admission, colon irrigation, mustard paste to chest, camphor in oil and digalen hypodermatically, turpentine stupes for tympanites. One patient received ammonium chloride.

If we group the influenza, influenza and bronchopneumonia, bronchopneumonia, and lobar pneumonia together, the mortality in the 32 cases was 2, or 6.3%.

1209 Dean St.,

ECZEMA FROM A DERMATOLOGICAL POINT OF VIEW*

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In this short article it is not the desire of the writer to discuss the symptomatology, diagnosis, differential diagnosis nor the histopathology of eczema, nor to any extent its treatment. There is but one phase of the subject left, namely, etiology and yet this communication is not to be a scientific discussion of the cause of eczema. The dermatologist, at the present moment, has no definite knowledge of the internal causes of the disease and he appreciates instruction received from the internist, the pediatrician and the laboratory worker. The real object of this communication is to briefly explain the modern dermatological conception of the disease and to discuss facts rather than theories. While valuable information has been gained through laboratory work and scientific investigation, yet the present conception of eczema is based largely upon clinical observation which has allowed the eczema of past generations to be split into a number of clinical entities. And this very desirable separation has been effected through a better appreciation of the external causes of the disease.

It is very important at the outset to thoroughly understand that there are no essential clinical or histological differences between eczema of internal origin and eczema of external origin. The variations in detail are due simply to the particular causative agent and the individual susceptibility. In searching for the etiological factor in a case of eczema one must exclude every possible external cause before assuming that the eruption is due to some internal fault. Such conditions and maladies as nephritis, diabetes, intestinal disturbances, teething, improper diet, food idiosyncrasies, etc., should not be accepted as the sole cause of an eczema unless all known external factors are first excluded.

The word eczema is not employed as much as formerly. In some of the recent text books the term is omitted entirely and the word dermatitis substituted. Without a qualifying adjective the term dermatitis includes all the eruptions that were formerly called eczema; the various clinical entities being given the generic term dermatitis with the addition of an identifying or descriptive adjective. Some dermatologists prefer to retain the name eczema for that group of eruptions that are apparently or undoubtedly due to internal causes while others still use the word as it was employed in past generations.

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*Read by invitation, before the New York Academy of Medicine, Section on Pediatrics, May 8, 1919.

One very important subdivision of dermatitis or eczema is that known as dermatitis venenata—eruptions due to certain plants and chemicals. Everyone is familiar with a typical example of dermatitis due to poison ivy. The cause can be ascertained as a rule by questioning the patient, or by recognizing characteristic signs of this particular irritant. But it should be borne in mind that there are examples of rhus dermatitis and dermatitis from internal or other external causes that cannot be differentiated clinically or histologically. When dealing with an eruption of this kind it is likely to be termed eczema if the patient is certain that there has been no exposure to a poisonous plant and dermatitis venenata if the individual has been exposed. Quite apropos is a case related by Fordyce. He was consulted by a patient who had a dermatitis of the hands and face in which there were symptoms indicative of ivy as the cause. It was midwinter, the patient had not been out of the city and she was absolutely certain that there had been no exposure to ivy. An inspection of the patient's residence revealed poison ivy berries among some Christmas greens received from a country relative..

Very recently the writer saw a boy who developed an eruption of the hands after exposure to poison ivy. The eruption was vesicular, became decidedly exudative and soon spread over the entire body. Nearly 3 months was required for a cure. During the first few days anyone would have thought of poison ivy—after the first few days no one would have been likely to think of the true cause.

The writer recently conducted a needless series of laboratory tests in a case of dermatitis (eczema) of supposedly internal origin. Finally, after several weeks, it was discovered that the patient was daily handling a number of primrose plants; the plants were removed and the eruption promptly disappeared—a case of primrose dermatitis.

Hair dye dermatitis usually develops on the scalp, neck or forehead and while the symptoms are those of eczema, the cause is suspected on account of the location and the suspicion is verified by inspection. But the writer has seen eruptions due to hair dye develop first on the fingers and spread to the eyelids by autoinoculation. Unless one is cognizant of such possibilities, the cause is likely to be overlooked. What has been said of hair dye is also true of certain chemicals used in hair tonics, notably resorcin. A case is recalled where a resorcin hair tonic provoked a very severe exudative dermatitis of the hands without causing even an erythema of the scalp.

So many new external causes for eczema are being demonstrated that such brilliant workers as W. J. Highman have been led to believe that perhaps a majority if not all eruptions of this type will be found to be directly or indirectly due to external causes when all such factors are recognized. During the past winter G. H. Fox, C. J. White and others have described a dermatitis of the thighs provoked by an irritant contained in match boxes carried in the trouser pocket. In the past few years, since it has been the fashion to wear furs in the spring and summer, dermatologists have seen a large number of eczematous eruptions beginning on the neck—a dye dermatitis. The explanation is that in warm weather the fur is allowed to come in contact with the skin and, furthermore, the skin is more susceptible to most external irritants when moist from perspiration.

It would be possible to recite hundreds of interesting and more or less unusual examples of dermatitis due to the action of chemicals. But it will suffice to call attention to the more commonly known irritants capable of provoking such an eruption: dyes or other chemicals in furs, hair dyes, hair tonics, shoes, stockings, outer garments and cosmetics; also metol, alkaline soaps, lye, lime, turpentine, picric acid, paraffin, tar, crude oil, lubricating oil, chrysarobin, sulphur, mercury, pyrogallic acid, belladonna, resorcin, formalin, shellac, varnish, resinous woods, poisonous members of the rhus family, primrose, tomato vine and many other substances.

It will be noted that many of the substances mentioned are used in the trades and they give rise, in susceptible individuals to the so-called trade eczema or occupational dermatitis. It is assumed by many that trade dermatitis occurs always on the hands. As a matter of fact it may attack any part of the body, primarily or secondarily.

Another group of eczematous eruptions due to external causes is known as infectious eczematoid dermatitis (Engman). The eruption begins as an erythema in the immediate vicinity of a discharging sinus, abscess, ulcer, discharging boil or results from a discharge from the nose, eye, ear or mouth. The discharge itself may be purulent or serous or seropurulent. After the appearance of erythema the tissues become edematous and finally exudative and then may spread over the entire body surface by peripheral extension or by autoinoculation.

Closely allied to the foregoing group is the so-called secondary eczema dermatitis (Fordyce). Here the eruption is secondary to some other dermatosis or due to a combination of external causes. Eczema very frequently complicates scabies and at times it occurs so early in scabies and is so severe as to completely mask the original disease. Such an eruption may be due to scratching, to the exudate from the scabies lesions, to the sulphur or perhaps the three combined. The same is true to a lesser degree in the three common types of pediculosis—capitis, corporis and pubis. Some of the cases of infantile facial eczema are due primarily to lack of scalp hygiene. Here the vernix is allowed to remain in situ and it is presumed that the organisms growing in the vernix may excite a cutaneous reaction.

Intertrigo is an inflammation occurring in locations subjected to moisture, friction, warmth and lack of cleanliness. If allowed to continue the eruption becomes an eczema; in fact it is eczema from the start. Pediatricians are familiar with the eczema occuring in the crural and anal regions and due to the irritating effects of urine and feces. There are many external contributing factors in the production of some examples of eczema. Uncleanliness is one; too much soap and water is another. A very dry skin is very prone to dermatitis and too frequent washing keeps the skin free of its natural oil. The skin in certain diseases is particularly liable to attacks of dermatitis, as for example ichthyosis and xerosis.

Another affection formerly considered as eczema is seborrheic dermatitis which usually but not always begins on the scalp as dandruff and which may involve a large part of the cutaneous envelope. Still another group consists of eczematous eruptions due to vegetable parasites. This group is growing rapidly in importance through the work of Sabouraud, Whitfield and Ormsby. We now know that several of the eczematous eruptions previously thought to be of internal origin are the result of vegetable parasitic growth in the skin. In passing, mention should be made of the neurodermatoses, some of which consist of eczematous eruptions, usually of limited distribution and often due to scratching. The itching in these cases is supposed to be neurological. Examples of this group are lichen chronicus circumscriptus and lichenification.

It will be seen from the foregoing that at least a fair proportion of the cases of eczema are partly if not entirely due to external causes. There remain the cases where no external cause is discernible. In such instances it is to be presumed that the skin is reacting to an irritant from within.

Thus far we have dealt with facts but to progress further into the etiology of eczema is to enter the field of speculation and theory. We know considerable regarding the external forces but very little is known relative to the manner in which some of them operate. It is known that a chemical substance contained in poison ivy is capable of provoking a dermatitis in a susceptible individual; but what constitutes or causes or governs the susceptibility? Such questions must be answered by the internist or the physiological chemist. Poison ivy comes in contact with a finger; an exudative dermatitis occurs on the same finger a few days later. Then, by autoinoculation, patches of dermatitis occur all over the body and this tendency to autoinoculation may last for 2 or 3 weeks. It does not seem reasonable to assume that each fresh patch of dermititis is due to chemical material obtained from the plant that touched only one finger. The assumption is that the patient becomes sensitized to a proteid, possibly a bacterial proteid, contained in the serous exudate. Autoinoculation is noted through the entire eczema group, particularly when there is exudation. In infectious eczematoid dermatitis the skin becomes sensitized to something in the original discharge, possibly a staphylococcic toxin. In some cases of secondary eczema it is thought that the skin becomes susceptible to this staphylococcus itself: this type of eczema is not infrequently pustular—impetiginous dermatitis. There is no doubt that the external cause of eczema is closely associated with idiosyncrasy. This susceptibility may be natural and last throughout life, as is likely to be the case of ivy poisoning. On the other hand, it may be acquired as in the case of a woman who has used a certain hair dye for years without untoward results finally to become so sensitized that a single drop of the dye will effect a cutaneous reaction. Because of variations in susceptibility the skin of different individuals will react differently to the same irritant and various irritants may provoke similar reactions in the skins of different individuals. Furthermore, the same reasoning may be applied to acute or chronic eczema of internal or external origin. In other words, whether or not an eczema begins acutely or insidiously will depend upon the nature and strength of the irritant and upon the susceptibility of the individual. And, of course, the duration and subsequent course of the affection are likely to be governed, at least to some extent, by this susceptibility. In cases of dermatitis venenata, infectious eczematoid dermatitis and eczema from other external causes, it is possible that the spread of the eruption is not entirely due to autointoxication. It may be that a toxic substance enters the circulation and in this way affects the skin at a distance from the original focus.

To discuss the possible etiological factors in eczema of internal origin would require a separate paper and such a paper would be largely theoretical. Such causes as faulty diet, sensitization to certain foods or foreign proteids, nephritis, internal disturbances of the thyroid, pituitary and other internal glands, etc., are recognized and given serious attention by dermatologists. Many able articles have been written along these lines but the fact remains that such causes have not been classified in relation to the clinical symptoms and hardly any two men will have the same idea of internal causation in a given case. Not infrequently internal and external causative factors coöperate in the production of eczema. As an example, a patient with nephritis or cardiac disease may have edema of the legs. The skin, on account of the poor circulation, is less able to resist germ invasion. A little scratching in such instances will suffice to start a dermatitis.

In closing, just a few words regarding the principles of treatment of eczema. One should first endeavor to interpret the cutaneous symptoms. Naturally the interpretation will vary according to experience. It is of the utmost importance to search for evidence of external causation—an external factor that is operating alone or one that is working in collaboration with some internal disturbance. If an external cause cannot be determined then the patient should be investigated for the various internal factors and if any are found they should of course be eliminated if possible. The principles of local treatment are about as follows:

1. *Acute Eczema.* Soothing remedies such as zinc oxide or zinc stearate, starch, etc. If the dermatitis is dry, ointments or powders may be employed. Ointments, however, should never be used where there is an exudate. Such a simple and non-irritating application as boracic acid ointment applied to an exudative surface may enhance the inflammation and cause the dermatitis to spread. The explanation is that the grease of an ointment interferes with drainage. It becomes elevated by the discharge so that it can have no beneficial influence on the inflamed surface, it prevents evaporation and, furthermore, the discharge, by spreading under the ointment, comes in contact with normal skin and the eruption spreads by autoinoculation. Powders are objectionable because they combine with the exudate and form crusts that are difficult to remove. If the exudation is slight, a paste will suffice. A paste differs from an ointment in containing a very large percentage of starch which soaks up a small amount of exudate. If the exudate is large in amount, a wet dressing is preferable.

2. *Subacute and Chronic Eczema.* Stimulating remedies such as tar, mercury, sulphur, iodine, salicylic acid, chrysarobin, benzoic acid, resorcin, etc., are indicated. The strength will depend upon the character of the eruption. It is advisable always to begin with mild ointments in order to test the susceptibility of the patient.

Both acute and chronic eczema require applications possessing antipruritic qualities. Probably the best cutaneous antipruritic is carbolic acid. It is the opium of the skin. Other valuable antipruritics for acute eczema are menthol, camphor, chloral hydrate, anesthesin and lead and opium wash; for chronic eczema, in addition to the drugs mentioned, oil of cade, sulphur, resorcin, and betanaphtol.

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MISCELLANY

THE FRETFULNESS OF CHILDREN*

If one set out to explain to those interested why it is that nearly all children some of the time and some children all of the time are fretful or peevish, at the very outset of the task it would seem obvious that the problem is an important one. "Fussing" is of more moment than at first glance many might suppose, because what it may at times lack in severity, it more than makes up in frequency among all classes of children. It is very like "common colds" in this respect—a topic worthy of far more bacteriologic study and of educative publication than has been given it, even at the expense of research into more directly fatal but much rarer diseases. To prevent peevishness is real conquest.

What we shall have to say concerning the fretfulness of children will be capable of immediate application to the care of actual "meat" youngsters, as their fond parents and usually less fond older sisters and teachers and maids know them in the nursery and about the home and school-house.

The reader will be pleased to understand that it is to children between the ages of 2 and 12 years that these remarks relate. *Babies* are peevish for simple reasons, included in our little discussion; and *adolescents'* fretfulness on one hand is of the adult kind in general, and on the other hand is a whole subject by itself —the psychology of adolescence which poets as well as scientists have wholly failed adequately to express. But childhood as distinct from both babyhood and youth has a fuss-ology, so to say, quite ample for our present achievement in a space always "too small."

In order to make clear all at once and once for all our present ideas as to the chief reasons why a child frets unduly, we should state them together, and under five heads, thus, for example: (1) Sense-hunger Group: (*a*) Ennui, (*b*) Fatigue, (*c*) "Disposition," and (*d*) Habit; (2) Unpleasantness; (3) Innutrition; (4) Toxemia; (5) Suggestion. I believe that under one or more of these headings may be usefully placed practically all the fretfulness of children both supernormal and "sub," healthy and ill, girls and boys, angels and imps—the wholly irresistible treasures of our homes. That the words above used to denote these causes of peevishness are not as difficult to understand as the average reader at first might fear will appear immediately, as we take up each one in turn; it is our over-concise programme.

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*By George Van Ness Dearborn, Ph.D., The Sargent School for Physical Education, Cambridge, Mass. From "The Child," London. Vol. IX. No. 7.

But first a general preliminary reminder or two. One base-idea plainly enough needed by many who personally care for children, is that *no young child enjoys being peevish* any more than his tired mother enjoys having him, to say the very least. Fretfulness is not a state or process of happiness; on the contrary, the "fussing" child would rather be laughing. There are, to be sure, occasional exceptions when children derive satisfaction from carrying on a strongly habituated phase of behaviour. The younger the child the more certain it will be that in peevishness he is unhappy, and more than agreeable to being rescued and relieved. The disharmony of the antique hand-organ on which the monkey sits when he can, bears deeper into the soul of the foreign musical gentleman who turns the crank, than it does into that of a more distant sufferer! The smile may not be carried out too far!

A corollary almost, from this foundation-principle of child-care is that *punishment is ordinarily a gross injustice.* Were anyone to be chastened it properly would be the nurse or the mother whose ignorance or neglect, or callousness, any two or all three, allows a child to suffer even mildly, unrelieved. For a woman is wise and capable, but a little child is—only a little child, the dearest of all God's creations, intricate and very sensitive, and always relatively ignorant.

The third and last of the preliminary propositions reads: that the perfectly normal child does not fret, for he is contented and therefore happy, revelling however mildly in that balance of pleasure, however small, that comes out of all normal living. Monstrous and unnatural is the childhood-life that renders a balance of pain! The peevish child is therefore in need of care for the correction of some degree of something abnormal, a chord not right. A perfectly normal boy or girl may be "naughty," for naughtiness often means nothing at all outside of mere conventionality: but *a perfectly normal child does not "fuss"*; to do so is unnatural, contrary to the basal principle of life itself and of mind, which connects joy with perfection in living and discomfort inevitably with something wrong.

We have termed four of the causes of fretfulness (ennui or boredom, fatigue, "disposition," and habit), "the sense-hunger group." By sense-hunger we indicate a basal lack all too conspicuous in many adults (making them tired even of life), but very common, indeed, in children, especially those of narrow physical and mental environments containing a small variety of interesting things. This causes a sort of hunger widely spread throughout the body's periphery, a hunger which indicates itself as an indefinite but often acute peevishness or fretfulness, index of a vague desire.

Adults of nervous temperament and of sedentary habits—those who take far too little muscular exercise—suffer often from "*the fidgets.*" This unpleasant aspect of ennui or boredom is at once relieved by a smart walk, even a short one, out of doors—or even by climbing not too fast up and down a single common flight of stairs ten or twenty times. By this simple means the mild excitement or "hunger" of the muscle-joint movement sense organs is allayed. Now, in children kept too quiet, physically speaking, the same persistent condition (technically termed hyperkinesthesia), more acute in them, and even almost painful, results often in fretting. Were the kiddies who are suffering from this particular cause of "fussing" free at the moment to gallop about a berry-dotted pasture or a grass-floored orchard, how quickly would their ennui and their peevishness be gone! Gross muscular exercise, preferably out of doors, is the medicine, often a "specific," for this cause of fretfulness. Once more, back to the farm!

Fatigue represents in one sense only a negative form of sense-hunger, for plainly one factor of resting is the inactivity of the sense-organs that have been over-used. On the other hand, rest has sensations, or, at least, simple feelings of its own, delightful somewhat in proportion as they are "purely" muscular.

A tired child, then, and usually a child whose spinal cord and brain are tired for the time, is especially apt to be peevish, because nerve-fatigue has as a prominent quality an abnormal irritability and sensitivity. This need not be enlarged upon, for it is exemplified and realized everywhere. Many of the fretful children we see in public places have been abused with a neglect of their necessity for frequent rest and sleep. Parents who would not venture to strike their child in reality are often far more cruel by depriving them of necessary sleep. A child of 8 needs a dozen hours of sleep in every two dozen—requires to rest half the time at least; if he did so, he would be seldom known to "fuss." Sleep in quantity is one of his "inalienable" rights which our constitution-making ancestors for ever secured to him, in theory.

"Disposition" is not so easily disposed of in our list of fussifiers, despite the suggestion of the word. Disposition stands for much in popular opinion and belief; it is a term used, like patriotism or charity, to cover a multitude of real sins or pseudo sins. Psychologically, it indicates, if anything at all, an extensive habit of regarding and reacting to conditions, always with an emotional tang, and usually on undevelopment of self-control. The child who often frets because he has "that kind of a disposition," usually of a fault-finding nature, has much to learn before he can conduct a really happy life. In its baldest and simplest, easiest terms this cause of peevishness is:—

Habit.—However important (and it is important above nearly all other matters in the theory and practice of child-training) habit cannot be discussed here; and it need not be, even in its relation to fussiness, so simple is this matter. Those pampered infants who find that complaint promptly or eventually brings them what they want, or think they want, forthwith develop the habit of complaining, of fretting. When it is pure habit the child has not a leg to stand on, so to say, and the parents and other educators of the embryo personality should act accordingly—in the manner most expedient. A firmly fixed habit provides, to be sure an acute form of sense-hunger, but none the less one not to be catered to, if the child's welfare be really at heart—any more than one is to be allowed to satisfy a craving for the delight bringing paregoric.

Actual immediate *unpleasantness* or discomfort probably is the occasion of a large fraction of children's fretfulness. The younger the child the larger is this fraction, unless the older child be ill. This term unpleasantness, or disagreeableness, is used in deliberate preference to pain, despite the fact that in practice the two often may be mixed together, and the line between them in other cases not appreciable. The human world's most ancient and most nearly universal complaint certainly is a protest against some form or other of pain or of discomfort; it is the basal motive-power of life as we know it. It dominates our world.

Appreciation of the causes of childhood's manifold discomforts is a *valid index of a nurse's or an attendant's or a governess's intelligence in her work.* Common sense, a quick sympathy and a modicum each of physiology and of psychology are required in order that the source of the unpleasant feeling or the pain quickly may be perceived and removed—from an unclasped safety-pin to a delicate disappointment or a chargrin not easily forgot. The mind of the child is essentially like that of the woman and of the man: therefore the caretaker, the keeper, should acquire the faculty and make it a habit of judging her charge by herself, putting him in her own place. Certain is it that a discomfortable child, and in proportion to his infantility, may not be blamed for "fussing"; philosophers of sixty do no less, although in different ways.

Innutrition, giving rise to a chronic, subconscious food-hunger, is just now a conspicuous cause of fretfulness. "Hooverism" inevitably affects the young children too in some cases, however far such injury may be from the intentions of our excellent food administrations. It is certain, then, that just now there are more than the usual number of underfed young children in our homes if not in our institutions and boarding schools.

As already has been hinted, an underfed child lacks the very foundations of contentment and of happiness, namely, well-nourished nerve cells and toned-up muscles. Just as the clever housewife when her homecoming lord and master (?) fusses, has learned to promptly "feed the brute," so the wise child-keeper will see to it that the peevish child has a right to be adequately fed before he is otherwise asked to reform. Here the child is the helpless victim of ignorance or of carelessness, and far too frequently of both at once. This magazine has ably gone over all this required wisdom of diet. No longer is even ignorance excusable in this essential matter of child-feeding.

Toxemia as a cause of the fretfulness of children is only to express a further explanatory step beyond the familiar *constipation* and *food-poisoning.* The word means a poisoning of the blood, a condition which could not arise were the diet free from infections and the intestinal contents normally "on the move." The constipated child is inevitably uncomfortable (and whether he appreciates it or not, sometimes!) and the absorption of toxins from his large intestine into the blood is inevitably a cause of irritability and therefore almost always of peevishness. In scientific terms not so hard as a mother might fancy, these still unknown toxins in some way lower the "threshold" of the sense-organs standing for pain or discomfort, and in this way keep the mind active when it should be at rest in peace if not actually asleep.

Suggestion, by itself, makes not a few children fretful and "fussy" and full of various complaint, logical or only physiological. This is the last of our list of occasions of peevishness, the causes proper all being within the child himself. Many parents realize from direct experience how suggestible children are; and some children are very much so in all directions. Oftentimes the child's personal independence of will exhibits itself by acting just contrary to the suggestive command or even nagging of his keepers: Johnnie is told so often not to fret, or cry, or fuss when he has no intention of doing so, much that he does so just out of human nature. This mode of reaction may with great ease become habitual, and continue perhaps until "the girls" laugh it out of him or "the boys" knock him out of it a dozen years later.

Child psychology never tires of laying emphasis on the essential likeness of all mind wherever found—in plant, brute, cannibal, infant, or adult—and particularly of the child mind and of the adult mind. The children's caretakers can always become wise in their work by observing their own mental processes.

SOCIETY REPORT

THE NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS

Stated Meeting, Held May 8, 1919

Murray H. Bass, M.D., *in the Chair*

ECZEMA FROM THE STANDPOINT OF THE DERMATOLOGIST

George Miller MacKee presented this paper (see page 221).

Discussion—Dr. Oscar M. Schloss said there were few conditions about which more had been written and said and less actually known than about infantile eczema. It was interesting to hear Dr. MacKee describe eczema as a group of symptoms elicited by different causes. Most pediatrists felt that eczema was essentially of internal origin or due to some form of internal irritation. It was quite generally felt that perhaps fat and sugar had some relation to infantile eczema; at any rate there seemed to be a relation between the eruption and the diet. He thought that in infants eczema must be regarded as a cutaneous response to an abnormal internal condition. It was known that in some instances there was a definite relation between infantile eczema and food idiosyncrasy. There were peculiar instances of bronchial asthma in which both the individual infant and the family gave a history of eczema and in which both the bronchial asthma and the eczema seemed to have an etiological relation to the ingestion of foreign protein. Possibly it would be found that a considerable number of these cases of eczema in infants would give a distinct reaction to foreign protein and, on the withdrawal of the protein responsible for the cutaneous eruption, the eczema would disappear. In some instances a diet composed of washed butter, lactose, milk, salts and water was followed by the disappearance of the eczema in from 72 to 76 hours. Blackfan had had similar experiences in a number of cases of eczema coming under his observation. He stated that in some cases the withdrawal of milk and putting the child on cereal caused the disappearance of the eczema.

Dr. L. T. Le Wald said that metol sometimes produced a severe dermatitis. Such a case was reported by Dr. N. Beers in the

New York Medical Journal, Sept. 12, 1908. There were instances of extensive metol poisoning that had come to his attention in which the dermatitis was transmitted from the hands to other parts of the body in the ways mentioned by Dr. MacKee. Inasmuch as metol was going to be used a great deal in amateur as well as in professional photography they would probably see a good many cases of dermatitis due to this agent, and it was also well to bear in mind that chemical substitutes for metol could cause a dermatitis. Certain skin lesions, from which roentgenologists had suffered, were due possibly to a combination of metol poisoning and the irritation caused by the x-ray. The metol would start the dermatitis and the irritation of the x-ray might be a factor in continuing it. If an individual had one form of dermatitis he should be warned against combining with it another form of irritation.

Dr. Charles Hendee Smith said that as he saw eczema there seemed to be two distinct groups of cases, and one of these was a definite protein sensitization. He might mention a child who came under his observation in the last few weeks who showed such a protein sensitization. This child had been eating pork, especially bacon, and when the pork was eliminated from his diet the eczema disappeared. In some children peanuts caused eczema and, indeed, many foreign proteins; in fact, these cases of foreign protein sensitization, showing a cutaneous reaction, were quite common. He also recalled a child who had chronic bronchitis every winter and also asthma and eczema due to chicken and eggs. As soon as the child ate egg he had asthma and eczema. He had not had chicken for a long time and the eczema disappeared. He then ate chicken and it returned. Both the asthma and the eczema were cured by the removal of the cause. While protein sensitization was a cause of eczema in some cases, it was also true that in others eczema might be produced by overfeeding, and the only way to cure these cases was by cutting down the number of calories and especially the fats. Dr. Smith also told of a patient who had a large greenhouse and who picked primroses in evening dress, as a result of which she had a dermatitis from her eyebrows to her heels.

Dr. Sidney V. Haas said he wished to bring out a point in substantiation of what Dr. Schloss had said, and that was that milk proteins were frequently factors in producing eczema. In children with an eczematous tendency it was often observed that this disappeared when the child reached the age at which other foods were taken with the milk. This had been recognized so frequently that it was quite common to predict that an eczema would disappear when the child was 2 years old; that was when the diet became more general. One interesting observation as made in an infant asylum a few years ago. Cottonseed oil was used as an application on the buttocks of the babies and it produced eczema on every baby in the ward. As soon as its use was discontinued the eczema promptly disappeared. The interesting thing about this occurrence is that cottonseed oil is not infrequently used in the treatment of infantile eczema of the buttocks.

Dr. MacKee, in closing, said he hoped he had not been misunderstood. He did not wish to convey the impression that dermatologists were not cognizant of the fact that there was an internal form of eczema. He had tried to limit the paper so that it could be presented in the time allotted, and to do this he had considered especially the external forms of eczema, but he thought he had made it clear that the dermatologist recognized that there were forms of eczema due to an internal causation. He could not disagree with what had been said about food protein for he knew that food protein would sensitize the skin and promote eczema. For this reason it was his opinion that the pediatrist was the man who should treat infantile eczema and the man to start the investigation into the various forms of this disease; that was why he had written the paper and presented the subject as he did, in order that the pediatrist might be acquainted with the external forms of eczema. He had had a case of eczema and asthma in which he thought he had found the cause of the condition. He removed the supposed cause and the asthma subsided but the eczema continued. In some cases of eczema a foreign protein might be a factor but there might also be a contributing external cause, and sometimes if the external cause was removed the eczema would disappear. He had had cases in which he prescribed local treatment and the eczema disappeared early, while in other cases the eczema did not respond to local treatment and then he called in a pediatrist.

GRAPHIC METHOD OF RECORDING PHYSICAL SIGNS

Dr. Charles Hendee Smith made this presentation. He stated that the present method used in the description of lung conditions was inaccurate and that there was no standard way of recording the results of lung examinations. Every clinic had its own system and there was no standard or uniform method thus far adopted. Scolly had devised a scheme of recording lung lesions in adults and Dr. Miner of Asheville had modified it, but it did not meet the requirements for a standard method of recording lung lesions in children. He had devised a system which had the advantages of showing the exact nature and extent of a lung lesion. The adoption of such a system, which would make it necessary for the person making the examination to record it accurately, would lead to the making of a more careful examination. By this system the signs might be recorded in black ink on a red rubber stamp of the chest. The signs elicited by percussion, the breathing voice and the character of the râles were recorded. Under percussion the area of dullness was indicated by parallel vertical lines; flatness by parallel horizontal lines; hyperresonance by small horizontal crosses; diminished fremitus, by a large angle with the apex to the right; fremitus (absent) by a small angle with the apex pointing to the right; increased fremitus by a large angle pointing to the left. Under breathing voice;—diminished breathing voice was shown by 3 short vertical lines; absence of breathing voice by 3 short horizontal lines; exaggerated breathing by a capital E; bronchial voice, by 4 lines, slanting from left to right; bronchial vesicular breathing, by 2 wavy lines; cavernous breathing by capital C, and prolonged expiration by 2 vertical lines with loops (ff). The râles were designated as follows: crepitant, small dots; subcrepitant, large dots; mucous, small circles; resonant, small checks; sibilant, small letter "s"; sonorous, small letter "s," horizontally placed; friction, a series of horizontal "x."

Dr. Smith stated that he was now working on a scheme for recording heart signs, but that this was not yet completed. This scheme, however, would provide for recording the area over which the heart was audible, the maximum size and the maximum rate of transmission. When the scheme was completed he hoped to be able to record the exact time in the cardiac cycle at which a murmur occurred.

LUNG ABSCESS IN CHILDREN

DR. HARRY WESSLER made this presentation which gave a résumé of his experience with lung abscess during the past few years at Mount Sinai Hospital. They had had 110 or 115 cases of lung abscess and bronchiectasis of which 16 occurred in children between the ages of 4 and 14 years of age. His observations had led him to believe that lung abscesses in children were somewhat similar to those seen in adults. In a general way, excluding rare cases, two types of conditions leading to suppuration in the lung might be distinguished; first, those due to pneumonia and, second, those due to the aspiration of a foreign body or septic material during an operation on the tonsils or upper respiratory tract. He thought it important to make this distinction in order to draw attention to that type of lung abscess which developed about 3 weeks after tonsillectomy. He believed that the reason for these abscesses was because, during the operation, the forceps squeezed out little plugs of septic material which were aspirated. This caused a local bronchitis; then later the wall of the bronchus became necrotic, broke down, and as a consequence there followed a widespread pneumonic abscess. The existence of such an abscess might not give signs until some weeks after an operation. In some of these cases the patient, after a time, coughed up exudate and the cavity automatically obliterated itself, while in other cases the cavity continued to contain fluid and septic material which was a constant menace to the patient.

The other type of abscess, following a pneumonia, was a chronic indurated pneumonic abscess, which might show itself as a diffuse bronchitis with a profuse expectoration. The post-operative lung abscess was usually gangrenous, due to an anaerobic infection, and was frequently easily diagnosticated by the odor. It might lead to a chronic suppurative condition lasting for several years.

Of the 16 cases of lung abscess in children, 7 followed pneumonia, 6 followed tonsillectomy, and 3 were due to the aspiration of a foreign body, one of these occurring after immersion in water. Those following pneumonia came into the hospital at periods varying from 7 months to 4 years after the primary pneumonia, while those following tonsillectomy came in during the first 3 weeks or one month following the operation. The aspiration cases came in a little later. In the post-pneumonia cases, the lower lobe was involved 7 times and in 2 of the cases there was an additional upper lobe lesion. Of the 6 cases following tonsillectomy, in only 2 was the upper lobe involved while in 4 the lower lobe was involved. In the cases due to aspiration the lower lobe was involved.

Of 100 adult patients having post-pneumonia abscess only one recovered. About one-third of the post-operative cases recovered, so that it seemed that the prognosis was much better for post-operative than for post-pneumonia lung abscesses. About one-third of the post-operative cases recovered spontaneously and several recovered after operation. He had never observed that a post-oprative lung abscess was cured spontaneously if it had persisted more than 3 months. It was at times surprising to see the rapidity of healing in some of the post-operative abscesses. He had seen a cavity as large as a lemon heal in a week.

The complications of lung abscess were very interesting and most important. Chief among these complications was rupture of an abscess with subsequent empyema or bronchial fistula. The presence of a bronchial fistula was suspicious of lung abscess. When one found a persistent empyema or bronchial fistula, the patient should be subjected to a bronchoscopic examination as the condition might be due to the presence of a foreign body. In the presence of a lung abscess, one of the first evidences that appeared was clubbing of the fingers which occurred so commonly in the earlier stage of the condition that it was often sufficient to make a distinction between chronic pulmonary tuberculosis and bronchiectasis. A bronchiectasis appearing from 3 to 6 weeks after operation might disappear as rapidly as it appeared. Another complication of lung abscess was hemorrhage which was more constant and characteristic than in tuberculosis. Very little interest attached to the physical signs as the diagnosis was dependent to a great extent on the x-ray findings, and before undertaking any surgical procedure it was absolutely necessary to localize the lesion by means of the x-ray. Dr. Wessler illustrated his talk with an interesting lantern slide exhibition.

Discussion.—Dr. Henry Heiman said that they were all interested in this subject. About 2 years ago Dr. H. T. Hyman collaborated with him in making a study of this subject, but they were not as fortunate as Dr. Wessler in finding so many children with lung abscesses. In Dr. Koplik's service of 4500 children, treated in 5 years, they found only 5 cases of abscess of the lung; in the adult wards these cases were much more frequent. In view of the many operations performed on tonsils and adenoids it was surprising that they did not find more cases of this kind. Primary abscess of the lung was extremely rare. The principal causes of these abscesses were meta-pneumonic, which includes aspiration pneumonia. Influenza was also responsible for many cases. Lung abscesses might follow pertussis, or they might come from adjacent conditions, as empyema, suppurative lymph nodes, esophageal abscess, etc. Three other factors might be responsible, otitis media, infective endocarditis or tuberculosis. The appearance of the lung abscesses was very well demonstrated if one remembered the honey-combed or sponge-like apparance of the lung as shown in the radiograph. Dr. Heiman said he must agree with Dr. Wessler that it was extremely difficult to make a diagnosis and it was fortunate that they had such able roentgenologists to assist them. If one found a foul smelling-sputum and then the x-ray confirmed the diagnosis the case was probably one for surgery, especially if there was a single abscess. The surgeon was more likely to be willing to operate if there was only a single abscess as the prognosis was much better than if there were multiple abscesses. If one found clubbed fingers, fluid in the chest, and the induration, so thoroughly described in the paper, he should be suspicious that he was dealing with lung abscess or bronchiectasis. In summing up the treatment it might be said that inhalations of creosote and creosote by the mouth had been of some help, but surgical interference was preferable especially as surgery of the chest was being so well developed at the present time.

Even if the discharge is profuse, as much as 14 to 16 ounces a day, and the abscesses multiple, lobectomy has been known to cure, especially if the abscesses were confined to one lobe. Bronchoscopy, as recently developed, has also been of great value in the diagnosis and treatment of lung abscess.

Dr. L. T. Le Wald said Dr. Wessler was to be congratulated on the excellent series of cases he had shown. One did not frequently think of the lateral position being obtained when one could not place the patient in the upright position. It was well to remember that the patient could just be turned on his side in bed and the x-ray taken in that position and it would demonstrate the level of the fluid, and this was the most convincing evidence of abscess of the lung.

Dr. Seymour Oppenheimer referred to 6 children who developed lung abscesses subsequent to tonsillectomy. From the reports published as the result of an inquiry made among the laryngologists about two years ago, there probably are reported as many as 100 of these cases. When we take into account all of the unpublished cases the number must be very considerable. To exchange a pair of tonsils for a lung abscess is a poor swap.

He said he did not wish to assume an attitude, "I am holier than Thou," and he hoped he would not be misunderstood, but his observation had been that many tonsil adenoid operations are performed entirely too carelessly both by the pediatrists and general practitioners with surgical ambitions, as well as by many of the laryngologists. For example: in recently observing six different men operate in the course of an afternoon at one of our prominent clinics, each operated by a different method, and while we grant that every road may lead to Rome, yet, some have pitfalls and are headed straight for the cemetery. Upon close inquiry, he found that of the large number of these cases, 26 which he saw operated at this particular clinic had either entered the hospital the previous night or on the day of the operation and only a local examination of these children's noses and throats had been made. He was satisfied that some of these cases had had a very recent acute infection of the upper respiratory tract and probably were still running temperatures or having considerable bronchial cough or a nasal secretion suggestive of an ethmoidal infection. In one, the character of the nasal discharge with the excoriated condition of the muco-cutaneous juncture of the nose, would to his mind have suggested a possible nasal diphtheria. In not a single instance was a blood examination made to determine whether or no a hemophilic or purpuric tendency was present. Three of these manifested a sufficiently troublesome amount of bleeding to have suggested very strongly that such a dyscrasia was underlying, although in one case, one could not help but reflect that the use of the bistoury was rather an antiquated method of operation and one attendant with the possibilities of inviting disaster. The invariable practice of controlling the bleeding was by compression. Only one operator of this group resorted to the use of the hemostatic forceps. Many of these cases left the operating table oozing and in all probability subsequently vomited up large quantities of swallowed blood. Observations of this kind raise the thought as to why should throat surgeons perform procedures differently than the general surgeons. Would the abdominal surgeon rely upon compression and close the wound without securely ligating every bleeding surface? If not, why should throat surgery be performed along such indifferent and careless lines. In not a single instance was a suctional method employed for keeping the throat free of blood and secretions.

The cause of these lung abscesses following tonsillectomy are either from anesthesia, embolism or aspiration. Anesthesia is probably the most infrequent cause unless the lung abscess is the result of a pneumonia secondary to the anesthesia. The aspiration of infected material expressed from the crypts of the tonsil, undoubtedly is the most frequent cause. It is important, therefore, that the throat be kept thoroughly free from blood and secretions by an assistant operating a suctional tube and that great care be exercised when the tonsil is cut through, so that these infected plugs, expressed from the tonsillar crypts, do not find their way into the bronchus. Tonsil operations should not be regarded as minor propositions and it is hoped that the pediatrists will, in view of the above, consider this matter more seriously. He also said, he did not wish to minimize the brilliant results oftimes obtained after the removal of tonsils in cases of remote infections, but it is a poor exchange indeed to replace a diseased tonsil, causing questionably some systemic infection, for a lung abscess.

Dr. Charles Hendee Smith said he had seen 4 cases with bronchiectasis and one with an abscess directly behind the heart. The physical signs and symptoms gave a positive diagnosis of bronchiectasis but the x-ray did not show it until the patient was placed in the oblique position. This was the common place in which one usually found these abscesses.

Dr. Wessler, in closing, said he had neglected to say something that he wished to bring out, and that was in regard to the question of gangrene. From indirect evidence it would seem that a gangrenous bronchiectasis was due to aspiration; it was probably not hematogenous but was primarily anaerobic for the reason that it had a definite incubation time. It was an acute anaerobic infection of the lung. In several cases the disease began 13 or 14 days after an operation, the patient beginning to spit up gangrenous sputum on the thirteenth day. That was quite distinct evidence that the infection had reached the lung by a definite route and was due to a definite kind of organism, and that it probably came from the mouth. In the second place many more abscesses of the lung occurred after tonsillectomy than after other operations. This was further evidence that the infection was from the mouth. In analyzing post-pneumonic lung abscesses there were found to be two types: an acute type and a chronic type. It was probable that the acute type was not a pneumonia abscess at all but a grangrenous abscess. This was probably the case when it developed on the thirteenth or fourteenth day. These gangrenous abscesses showed a predilection for upper lobe involvement. An acute gangrenous abscess it would seem was not due to pneumonia but to the aspiration of infection from the teeth or tonsils. He had had one gangrenous bronchiectasis following immersion and one following an overdose of morphine. In these there was an acute anaerobic infection which had an incubation period of 13 days. When one had seen 100 or 120 of these cases and realized their hopelessness, he was forced to ask the question: what are we going to do with them? They were absolutely hopeless after the condition had persisted for 3 months, and if they did not die they wanted to die. In cases that were not complicated by large pleural adhesions, where operation was impossible, and if the patient was under 35 years of age, he should be operated upon. A lobectomy should be done. These cases were not cured by simply opening the abscess and they were not cured by pneumothorax. A pneumothorax favored fibrosis and in these cases fibrosis was to be avoided. Lobectomy seemed to be the only procedure that avoided the spread of infections material to the rest of the lung.

DEPARTMENT OF ABSTRACTS

COBB, JOSEPH P.: THE CARE AND FEEDING OF THE PREMATURE INFANT. (Journal of the American Institute of Homeopathy, April, 1919, p. 1114.)

Cobb in his discussion of the care and feeding of premature infants states that babies born before the seventh month of life will usually die within a short time after birth. Occasionally, however, children as young as 6½ months have been saved and have become vigorous and useful members of the community. The outcome he claims depends upon two factors: its vitality and its care. Its vitality, of course, depends upon several factors, among which may be mentioned, as of first prominence, the degree of health of its parents, especially its mother, and the degree of nourishment which it has received, and which of course itself depends in part upon the mother's health. The factor which should be considered of greatest importance, in the prognosis with reference to vitality, is the question of the degree of atelectasis that is present. Premature babies invariably have small areas of atelectasis. The lower the vitality the greater in extent these areas are liable to be. If the baby has the factor of hereditary syphilis, the atelectasis is apt to be an important and determining factor in the inability to respond. If the temperature curve is normal, the baby's chances of improvement are good. If, however, there are wide variations in the temperature, sudden drops with little exposure, and sharp rises as the result of application of artificial heat, the outlook is less favorable. Few babies weighing less than 4 pounds have organs sufficiently developed to functionate to the extent that they can maintain an independent existence.

The treatment divides itself into 3 heads, namely; first, the question of heat and the maintenance of a steady temperature; second, care to protect the child from unnecessary irritation; third, the question of nourishment. In the maintenance of an even temperature good results can be obtained in an ordinary crib, properly protected, in a room where the temperature can be maintained at 80° F. to 85° F. But it is equally important that fresh air and clean air should have access all the time. In protecting the child against irritation by its new surroundings, there should be as little handling as possible. Noises and bright lights should be avoided. The daily oil bath with very little rubbing is necessary so that the baby should be tired as little as possible.

The question of feeding is the real problem. Breast milk, if it can be obtained, is the food of choice. If breast milk cannot be obtained the author considers whey the most satisfactory food, to begin with, as it is low in fat and casein. It is also very easy to increase the food value of whey very gradually, by adding small percentages of fresh cream to the whey itself—since the premature baby takes such a small amount at a feeding not more than ¼ to ½ ounce,—and that even of a food much below normal in its food value, he considers it wise to feed them at 2 hour intervals for the first 2 weeks. If the baby, after the first few weeks, does not do well on the artificially prepared food, and the mother has no milk, he suggests a wet nurse. He also mentions gavage as a method of feeding in those infants who do not at the beginning exhibit the ability to swallow. C. A. LANG.

GREIG, DAVID M.: CONGENITAL EDEMA. (Edinburgh Medical Journal, April, 1919, p. 230.)

Greig reports a case of congenital symmetrical edema of the feet in a male child, 6 weeks of age. He was born at full term, a healthy, well nourished, and (except in relation to his feet) a well-formed infant. The youngest of 3, neither of the other children and neither parent presented any abnormality, and there was no occurrence of a similar edema known in any relative. The edema which was noticed at birth, was strikingly symmetrical. It formed on the dorsum of each foot a very prominent swelling, more exaggerated and obvious to the lateral than to the mesial aspect of the foot, and more pronounced toward the toes than toward the ankle. This prominent mass appeared to overhang the fifth metatarsal and to bulge forward over the toes. The toes themselves were involved in the edema, giving them the appearance of being fat and "podgy," while the transverse grooves, marking the metatarsophalangeal and the interphalangeal joints, were deeper than usual. On the plantar aspect each foot was full and slightly convex from side to side, and the transverse lines were absent or less marked than normally. The skin over the areas involved was smooth and had a distended appearance. At its maximum the swelling on the dorsum would be fully an inch in depth. The edema did not pit easily on pressure, and was peculiarly firm and resistant. It was not noticed that the feet were less warm than natural, and there was no discoloration nor dilitation of vessels. No enlarged lymphatic glands were anywhere observable.

The condition being of rare occurrence the author gives a review of the literature and quotes Milroy's classification of the characteristics of the disorder.

(1) Congenital origin, with a steady growth corresponding to the normal growth of the body until adult size is attained.

(2) Limitation of the edema to one or both lower extremities, the areas involved varying.

(3) Permanence of the edema.

(4) Entire absence of constitutional symptoms.

Greig's conclusions as to the pathology of the condition are as follows:

It may be the first instance of what is to become later an hereditary defect. Its characters and its progress suggest some local symmetrical congenital defect in the lymphatics rather than a vascular affection, whether neurotic or otherwise in origin. The condition is distinct from that inequality of limbs not unfrequently found in new-born infants, in which one limb or part of it appears unduly fat and the grooves at the joints are deeper than usual, for in this condition there is no edema and the parts are normal to touch and not firm. It is also distinct from unilateral hypertrophy in which the determining factor of the overgrowth is very probably a central nervous affection, secondarily involving alterations of blood vessels in growing fetal tissue. Finally, that it is distinct from progressive subcutaneous edema in which there is probably an ascending lymphangitis or perilymphangitis, hinging about lymphatic obstruction, and characterized by its late onset and steady progression. C. A. LANG.

KURLANDER, J. J.: A CASE OF CONGENITAL MALFORMATION OF THE LEFT FOREARM WITH ABSENCE OF THE HAND. (Journal of the A. M. A., March 29, 1919, p. 937.)

Kurlander reports the case of a boy, aged 9 years, healthy and normal in all respects except for the left upper extremity, which at first sight resembles very closely an intra-uterine amputation through the upper third of the forearm. The humerus is normal in size and function. There is normal range of motion at the elbow. The radius and ulna are palpable, and at their distal end is a small piece of bone, to which is attached a flexor and an extensor tendon. This small bone, evidently a rudimentary metacarpal bone, can be very easily flexed and extended. The stump is well shaped and padded. The roentgenograms show that the condition is not an intra-uterine amputation, since both the radius and the ulna are practically perfectly formed, being only half or one-third the normal length. There is complete absence of carpal and metacarpal bones, with the exception of the single rudimentary metacarpal bone, and absence of phalanges.

C. A. LANG.

STOLL, HENRY F. and NEUMAN, LESTER: THE COMPLEMENT FIXATION TEST IN THE DIAGNOSIS OF TUBERCULOSIS. (Journal of the A. M. A., April 12, 1919, p. 1043.

In a series of over 100 cases of known or suspected tuberculosis, complement fixation tests were made by Stoll and Neuman who came to the following conclusions:—

1. It is at once apparent that the practical utility of the complement fixation test in the diagnosis of tuberculosis is limited by the fact that the highest percentage of results obtains in the cases in which its need is least felt, namely, the obvious cases with tubercle bacilli in the sputum.

2. Nevertheless, from our experience, it would seem that with suspicious symptoms and suggestive, yet inclusive signs a negative fixation test, using the method herein described, increases to a considerable degree the probability of the nontuberculous nature of a given case.

3. With the same symptoms and signs, a persistently positive reaction probably signifies an active tuberculosis.

4. A positive reaction occurring with neither symptoms nor signs does not justify a diagnosis of active tuberculosis, though it is quite probable that there has been an active process recently. In such a case, roëntgenoscopy should be employed and the patient observed for several months.

5. With faint signs and symptoms, yet with no tubercle bacilli in the sputum, a negative test cannot outweigh the clinical evidence, though in all such cases a Wassermann test should be made.

6. The diagnosis of tuberculosis is many times one of great difficulty. A careful history, a thorough examination, repeated sputum examinations and roentgenoscopic studies are all of recognized importance and cannot be replaced by any complement test yet devised. C. A. LANG.

RICHARDSON, D. L., AND CONNOR, HILARY: IMMUNIZATION AGAINST MEASLES. (Journal of the A. M. A., April 12, 1919, p. 1046.)

In the spring of 1918, there was a severe epidemic of measles in Providence, R. I., which gave Richardson and Connor an opportunity of attempting immunization against this disease in children who had been exposed. Their conclusions were as follows:—Six children were definitely exposed to measles and were apparently protected from the disease by immune serum; one, used as a control, developed measles. Eight others were partially exposed and did not develop the disease after immunization. Three other patients received virus innoculation and immune serum simultaneously. In 2 there was no reaction. In the third there was a slight reaction indicated by a transient rise in temperature and an atypical rash. The authors state that the experiments are too few to be conclusive, but they are sufficiently suggestive to warrant further investigation.

C. A. LANG.

WATKINS, W. WARNER: PERTHES' DISEASE. REVIEW OF LITERATURE AND ILLUSTRATIONS OF ONE CASE. (Southwestern Medicine. March, 1919, p. 1.)

Perthes' disease is a hip joint disease of childhood. Watkins, in an exhaustive review of the literature, found that hip joint conditions, described as anomalous, but which were afterwards recognized as belonging to this class were first described by Feiberg of Cincinnati in 1905, in which the absence of osteophytes in conditions of arthritis deformans were noted. In 1909, Legg of Boston reported 5 cases. In 1910, Jacques Calve reported 10 cases and almost simultaneously Sourdat reported 9 of the same type. In 1910 Waldenstroem of Stockholm, presented a monograph on "Tuberculosis of the Neck of the Femur in Children," from which Legg in a recent article selected 7 cases as being nontuberculous. George Perthes, after a preliminary study in

1910, presented a classical monograph in 1913, in which he suggested the name "Osteochondritis Deformans Juvenilis." The disease, since the publication of this monograph, has been known as Perthes' disease—sometimes Calve-Perthes' disease.

The complex of symptoms are as follows:—

(1) Age, 2½ to 12 years.

(2) Appearance of limp, with or without history of trauma.

(3) Prominence of great trochanter on affected side.

(4) Limitation in motion, most marked in abduction.

(5) No crepitation; capsular thickening.

(6) Muscular atrophy of glutei and of thigh muscles later.

(7) Little or no pain, except at onset; there may be exceptions to this.

(8) Little or no spasm; occasional exceptions to this.

(9) Trochanter above Nelaton's line.

(10) Tendlenburg symptoms usually present (waddling gait due to paralysis of glutei muscles).

(11) Legs of equal length.

(12) von Pirquet, negative usually.

(13) Wassermann and family history negative.

(14) Patient's history negative.

(15) No evidence of old rickets.

(16) Duration 6 months to one year.

(17) Typical roentgen appearance, flattened appearance, mushroomed or cap like epiphysis, hypertrophic thickening of neck of femur; appearance of coxa vara.

The cartilage is not affected by the pathological changes begun in the bone beneath the cartilage, leading to a softening of the epiphyseal head, which flattens out.

Roberts contends that the condition is syphilitic, because:

(1) Osteochondritis is such a common expression of sphyilis in children.

(2) A negative Wassermann is also a very common occurrence in hereditary syphilis of bones or joints.

(3) He finds dental evidence of syphilis in his cases.

(4) His cases have improved so rapidly under mixed treatment.

The case illustrated occured in a boy 5 years of age, with some knee pains and other symptoms. Perthes describes the condition as always unilateral. Later observers have noted the cases of bilateral involvement. This case was a bilateral involvement. The radiograph is typical of osteochondritis deformans juvenilis: there is now no pain at all in the hip joint or knee; the general condition of the patient is good. The observations of Roberts have some support in this case which presents very suspicious teeth. A diagnosis of bilateral hip joint tuberculosis had been made. C. A. LANG.

MACLEOD, N.: TREATMENT OF WHOOPING-COUGH. (The Lancet, February 15, 1919, p. 254.)

In 1886, W. H. Barlow reported the successful treatment of 50 cases of whooping-cough by brushing the throat with resorcin solution. Macleod tried the treatment with marked success in certain cases. The test of success was reduction in the severity and frequency of night paroxysms. The brush removes mucus and is used hourly during the waking period. The paroxysms are due, probably not so much to the quantity of mucus, usually not large, but to its tough and sticky character. Removal by brush lessens the need of removal by cough. The paroxysms indicate increased reflex irritability and inadequate inhibitory power. The latter is reinforced by the hourly opening of the mouth widely, sticking out of the tongue during forced respiration while a brush is being turned round the pharynx and frequently the larynx. Tolerance of the brush shows less irritability.

The writer claims a great amelioration of the symptoms within a week or 10 days by the following method: For each case a wire-handled throat brush, bent at first suitably for pharyngeal use. When tolerance there is established it should be further bent to form almost a right angle, about 1½ inches from its point, proximal and distal parts being straight, for laryngeal brushing—quite practicable without artificial light and mirrors. A 2 per cent solution of resorcin in glycerine and water, 1 and 12 parts respectively. Immediately before each early application of the brush it is well to put the patient through a preliminary drill in breathing deeply with the mouth wide open and the tongue well protruded, to be persisted in while the brush is introduced into and passed quickly once around the walls of the pharynx. Mucus should be washed off on withdrawal and the brush kept in a tablespoonful of the resorcin solution—renewed daily—to be ready for the next performance one hour later, the procedure being repeated regularly during the waking period. In cases shy of the brushing it is helpful at the first performance or two to be satisfied with introduction short of the pharynx, so that contact becomes tolerated sufficiently by the tongue, etc., and the sweet taste of the solution experienced; repeated 3 or 4 times on each occasion. Gradually introduced further the brush soon reaches the pharynx, where a single turn round its walls suffices. The attempt to enter the larynx should not be made until brush toleration is set up in the pharynx. C. A. LANG.

LEIPOLDT, C. LOUIS: PEDIATRIC NOTES ON THE INFLUENZA EPIDEMIC. (Medical Journal of South Africa, December, 1918, p. 327.)

Previous to the general closure of schools in Pretoria, and while the epidemic of influenza was at its height, frequent opportunities occurred of seeing cases of the disease in children. Three very distinct types of the disease were noted. The first was a mild type characterized by an incipient malaise accompanied by a rise of temperature rarely exceeding 100° F., epistaxis, and sometimes, though rarely, vomiting. This was undoubtedly the most common form among children. The second type was characterized by an onset with headache, slight sore throat, pain in the chest, and catarrhal symptoms, with a rise of temperature that varied from 99.5° F. to 101.5° F. It was this type that showed the most frequent relapses and progress towards secondary infections, mainly of the respiratory tract, but in general it was a fairly benign type, and the pulmonary complications responded readily to treatment. The third type was characterized by hyperpyrexia, with relatively slight clinical signs; it was a much rarer type, but some of the cases were exceedingly grave, and were rapidly followed by secondary infections developing an asphyxiating bronchiolitis, meningitis, or what appeared to be a general septicemic condition. The fatal cases were all due to this type. The most common complications were hyperpyrexia, bronchitis, bronchiolitis, broncho-pneumonia, nervous symptoms resembling meningitis, myocarditis and otitis. Skin rashes were observed in a large percentage of cases. They varied from a slight febrile rash on the face and inner sides of the limbs, to well-marked punctiform rashes on the thorax, trunk, abdomen and face and neck. In some cases it was petechial in others it closely resembled the discoloration seen in early cases of purpura hemorrhagica. In a few it was strongly suggestive of scarlet fever and German measles. The prevailing type of rash was polymorphous, and only rarely followed by desquamation.

C. A. LANG.

HARDEN, A., AND ZILVA, S. S.: SCURVY AND LEMON JUICE. (BIOCHEMICAL JOURNAL, October, 1918).

Harden and Zilva have succeeded in separating the bulk of the citric acid from lemon juice without diminishing appreciably the antiscorbutic qualities of the residue. The heated lemon juice, which was freed from citric acid by treatment with calcium carbonate and alcohol, was fed in quantities equivalent to 2 c.c., 3 c.c., 5 c.c. and 7 c.c. respectively to 4 guinea pigs. These animals received oats and bran in unlimited quantities and 50 c.c. of autoclaved full milk per day. After 80 days the animals were killed by chloroform. The curves of the weights of the animals during the experiments showed that the animal receiving 2 c.c. just managed to maintain its weight. The animals fed with 2 c.c. and 3 c.c. showed slight hemorrhages in the femoral muscles and slightly enlarged costo-chondral junctions thus proving the presence of incipient scurvy. Experiments showed that there was no appreciable lessening of the antiscorbutic quality in the treated lemon juice from that of ordinary lemon juice as a result of fractionating the juice. The heated lemon juice did not, however, retain its full antiscorbutic properties after 14 days in the cold room. The antiscorbutic properties of the treated juice were completely lost after its evaporation to dryness at 40° C. After acidifying the heated lemon juice by adding 0.1% of citric acid the liquid could be evaporated to dryness at 40° C. without loss of the antiscorbutic factor. The administration of the heated lemon juice by subcutaneous injection to guinea pigs suffering from well declared scurvy did not produce any amelioration in the condition of the animal, and the progress of the disease was unaltered. Experiments also demonstrated that the previous administration of large quantities of the heated lemon juice previous to placing the animal on a diet leading to the development of scurvy, had no influence in preventing the onset of the disease. The administration of heated lemon juice, corresponding to 980 c.c. of ordinary lemon juice, during 5 days to a monkey suffering from scurvy led to rapid improvement.

C. A. LANG.

DONNELLY, LEO. C.: TREATMENT OF CLUB FEET IN THE NEW BORN. (Detroit Medical Journal, March, 1919, p. 91.)

Donnelly claims that the physician who attends the birth of a child with club feet should insist that treatment be started by the tenth day. The reason for this is that the foot is small, easily molded, and if corrected then, the bones and soft parts will grow in their normal position. Each month that the deformity is permitted to continue means one month more development in a faulty position. The majority of club feet can be easily corrected manually, and there is no need of operating or correcting the deformity by means of powerful wrenches. The foot and leg are cleaned, dried, powdered with talcum, a stockinet tube applied from toes to mid thigh; over this a layer of sheet wadding is smoothly applied. The deformity that is to be corrected is one of inversion and adduction of the forefoot and contraction of the tendo achillis. The inversion and adduction of the forefoot is corrected first, the contracture of the tendo achillis is treated later. The knee is flexed at a right angle and the cast extends over flexed knee to mid-thigh in order that the cast does not rotate on the child's small leg and the inverted position of the forefoot be resumed. The forefoot is held in a position of eversion and abduction by an assistant while the plaster bandage is smoothly applied. The limb is held in the corrected position until the plaster sets. In 10 days remove the cast and prepare to reapply a similar cast, forcing the foot further out in abduction and eversion. About 3 casts will be necessary to overcome the greater part of the forefoot deformity. It is then necessary to overcome the shortened tendo achillis. A cast is carefully applied to the foot like a slipper, snugly and smoothly; grasping the forefoot, this is allowed to dry while applying the leg cast from the ankle to the mid-thigh, knee flexed as before. While the assistant holds the foot in dorsi-flexion, abduction and eversion, a few turns of plaster bandage are applied, holding the foot-cast and leg-cast together, maintaining correction and eliminating any possibility of undue pressure at the bend of the ankle from indenting of the cast where it crumpled on itself or pressure from wrinkling the sheet wadding. Eight or ten casts are applied at 10 day intervals until the unsupported foot retains its position of overcorrection—that is, eversion and abduction of the forefoot with dorsiflexion at the ankle. After the casts are removed and until the child begins to walk the mother always holds the foot in an overcorrected position, while nursing. Each night the foot is held in overcorrection by applying an inch-wide strap of adhesive plaster, starting at the base of the little toe on the dorsum of the foot, passing internally across dorsum of foot, under sole and then up outer border of fibula. As soon as the child begins to creep, a ¼ inch strip of leather is applied under the outer portion of the sole of the broad toed shoes. Raising the outer portion of the sole maintains eversion and abduction and slight dorsi flexion. The foot is also massaged morning and night until entirely well, during massage so manipulating the foot that overcorrection is aided. The author states that this plan of treatment carefully followed out, has given very good results. C. A. LANG.

ENGLISH, DAVID E.: EATING. (Journal of the Medical Society of New Jersey, July, 1918.)

On account of the scarcity of food in the world today, English states that one of the most important subjects for the consideration of the people, is the subject of eating. Every ounce of unnecessary food eaten by Americans today is an ounce taken away from someone who is greatly in need of it and is also assisting the German Government in winning the great war of autocracy against freedom. The author claims that overeating is a matter of habit and very early in life the human stomach becomes relaxed, or stretched, so that by the time 40 years of age is reached in perhaps 90 per cent of human beings, the stomach holds more than is necessary or natural. To eat until one has a comfortable sense of distention with such a stomach is to eat much more than can be properly digested and assimilated. The residue rots and ferments in the colon, causing a chronic systemic poisoning which manifests itself in constipation, muddy skin, flabby tissues, dull headaches, irritability, stiff joints, sore muscles, foul stools, early arteriosclerosis and lack of energy. This condition of the stomach is frequently begun in infancy, and is due to too frequent feeding. Infant feeding is therefore one of the most important factors in the prevention of overeating in adults. On how they are fed during the first 12 months, depends very largely the kind of adults they will become. On the kind of adults they become depends the welfare of the whole world, and the survival of the human race. His method of infant feeding he calls the natural method, differing considerably from the so-called scientific method. He summarizes as follows:—

(1) Never feed an infant until you are sure it is hungry.

(2) Never feed an infant at exactly regular intervals.

(3) When feeding an infant give it all it will take of a proper and palatable food. Do not let it fall asleep too soon; shake it up and get it to take more.

(4) After feeding, the baby should be allowed to sleep. This sleep should be encouraged to continue as long as possible.

(5) An infant should not be fed as soon as it wakes. First give warm water. Then keep it quiet and contented as long as possible. Finally let it cry a reasonable length of time. The crying prepares the stomach for the next meal.

(6) When the infant cries sufficiently and the stomach is completely empty, and has had enough time to contract and rest, it should be fed again.

This method he claims will not cause dilatation of the stomach provided the feedings are not too frequent. In using the natural method the infant is fed approximately every 2 hours during the first 2 weeks and the intervals become gradually lengthened until at the age of 2 months, the infant will be having 5 feeds during the day and one in the night. At 2 months of age, the night feeding should be discontinued. By the ninth month, provided the baby has 4 good teeth, regular feeding should be established. That is 3 full feedings in each day with two lighter feedings, one in the middle of the forenoon and one in the middle of the afternoon. These 5 feedings are generally continued until the child is 2 years of age. In some robust infants however, the number may be reduced to 3 feedings a day during the eleventh month or at the age of one year. Much harm is done by allowing children to eat between meals and this habit should not be allowed under any circumstances. In adults plenty of time should be consumed in chewing the food and no one should hurry over a meal. If this is done, it takes much less food to satisfy the appetite. The people of America he claims can be a great help in the world war by fighting their own bad habits and perverted appetites, not only benefiting themselves by so doing, but also, by conserving food, help feed the starving, and adequately supply our brave boys fighting in France. C. A. LANG.

REID, CHARLES DWIGHT: CONGENITAL MALFORMATION OF THE SPINE. (New York State Journal of Medicine, May, 1919, p. 161.)

The author draws the following conclusions: (1) Congenital defects of the spine are by no means as rare as they were formerly supposed to be. (2) Radiographic study of all cases complaining of backache, or cases presenting visible deviations from the normal curves, no matter how slight, should be made, as frequently the diagnosis will be at once cleared up and the patient saved a long, expensive period of medication or inefficient mechanical treatment, and kept out of the hands of charlatans and quacks. (3) Treatment of congenital scoliosis in patients of adolescent or adult age is frequently more satisfactory than in cases of acquired curvatures. (4) Operative measures are for carefully selected and skilled operators.

HAROLD R. MIXSELL.

SMITH, CHARLES HENDEE: THE CARE OF CHILDREN BEFORE AND AFTER TONSILLECTOMY. (New York State Journal of Medicine, May, 1919, p. 168.)

Dr. Smith arrives at these conclusions: Before advising that a child have an operation for enlarged tonsils it is important that his general condition should be taken into consideration as well as his throat. A careful history and examination of the child and of his urine and blood are necessary in order to rule out organic disease. It is desirable to try to improve the nutrition of markedly undernourished children by rest and feeding for a few weeks before operating. The child should be prepared for tonsillectomy as carefully as for any operation. After the operation he is entitled to an anodyne, and should be kept in bed for 5 to 7 days, with careful nursing and feeding. Preparations should be made to treat hemorrhage if it occurs. Under this plan the loss of weight is reduced to a minimum and the original weight is recovered within a few days.

HAROLD R. MIXSELL.

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ORIGINAL COMMUNICATIONS

MALNUTRITION IN CHILDREN—A STUDY OF THE EXAMINATION OF NINE HUNDRED CHILDREN UNDER EIGHT YEARS OF AGE.*

By Murray B. Gordon, M.D.,
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and
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The nation wide agitation for better babies and better children inspired the writers to examine the children at the Seaside Home at Coney Island, New York, with a view of determining the percentage of poorly nourished children, and, if possible, the causes for the malnutrition. This home is conducted in association with the Seaside Hospital by the Brooklyn Children's

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*From the Seaside Hospital and Home, Coney Island, Brooklyn, N. Y.

Aid Society. The children are of the poorer element of the city and are referred to the home by private physicians or dispensaries. They are accompanied by their mothers and remain for a period of one week.

The examinations, upon which this report is based, were conducted during the summer of 1918. Each child, upon admission, was examined by one of the house physicians and then weighed and measured by a nurse. All the children were weighed stripped. Cases requiring hospital care were admitted to the Seaside Hospital, so that all the children at the Home were in apparently good or fair health. The dictation of the findings of the examining physician were entered by a nurse upon a card. In those instances where defects were found, the mother was given a card informing her of the disorder or ailment present and advising her to consult a private physician or a dispensary. It was intended to have a social service worker follow up these referred cases and report as to the home surroundings and the ultimate disposal of the case, but due to the conditions produced by the war, this part of the program could not be carried out, so that we are unable to state as to the number of children subsequently treated, or the results of such treatment. We hope next year to elaborate upon this phase of the work. In conducting examinations of this sort, it is necessary to obtain the active coöperation of the parents to achieve success. Our method for acquiring the good will and aid of the mothers was through the medium of a lecture, given once a week on an afternoon previous to the examination of the children, this examination being made by one of the writers and independent of that made upon admission by the interne. As the personnel of the visitors changed weekly, this necessitated the covering of the same ground at every lecture. These lectures, or rather informal talks were delivered in English and occasionally in Italian, when the nationality of the mothers warranted it. The scope included the purposes of the examinations, special emphasis being placed on the importance of investigating the condition of the health of the children, of ascertaining the existence of any hidden disease and the ultimate hope of remedying the defects found. The general care of the infant and the child was considered. Questions were encouraged and as a rule these were numerous and beneficial to the entire assembly.

This report is based upon the examination of 900 children at the Home, ranging in ages from 1 month to 7 years, with a small number above that age. The respective ages of male and female were as follows:

Age	Male	Female	Total
1 yr.	82	84	166
2 yrs.	83	90	173
3 yrs.	56	77	133
4 yrs.	61	56	117
5 yrs.	54	44	98
6 yrs.	43	58	101
7 yrs.	37	40	77
8 yrs.	14	21	35
	430	470	900

The nationalities represented were: Irish, 205; Italian, 311; American, 195; miscellaneous (Jewish, Russian, German, English, etc.), 189.

The methods of determining the state of nutrition were (1) a modified Dunfermline scale, grading good, fair and poor on appearance; (2) height to age basis, grading good, fair and poor; (3) weight to age basis, grading good, fair and poor and (4) weight to height basis, irrespective of age. The standard used was the table used by the Children's Bureau of the United States Department of Labor. As pointed out by Holt, the average weight cannot be regarded as a line but rather as a zone, 10 per cent below being arbitrarily fixed as the boundary. With this as a guide, we graded as good all those whose weights were normal or above for their respective age (or height in the fourth classification), fair those whose weights were within 10 per cent. below the average and poor those with weights falling below 10 per cent. Upon classifying the findings of the examinations, the discrepancies in the proportion of poor in each group compelled us to add a fifth class. It was not just to grade as poorly nourished one who was poor on appearance, fair on height and good on weight, nor was it correspondingly correct to classify another as good because his appearance warranted that grading and still his height and weight were so much below the average for his age as to place him in the poor column in the latter two scales. We therefore decided to divide the poorly nourished into two divisions: the relatively poor and the absolutely poor, calling those who were poor on appearance or weight as relatively poor and those who were poor on appearance, height to age basis and weight to age basis, as absolutely poor.

Holt, in his recent article, states that the weight to age and the height to age standards are not as reliable as that of weight to height irrespective of age. He considers that the 3 classifications which are susceptible of application to large groups of children are: (1) the weight to height relationship; (2) the annual rate of increase in weight and growth in height and (3) the general appearance of the child. In an examination such as ours, it is of course impossible to obtain accurate figures as to the annual increase in weight and growth in height. Table 1 shows that the weight to height relationship is more reliable as a test than the

Table 1.—To show comparison between standards of general appearance, weight to age, height to age, weight to height and absolutely poor.

	Good	Fair	Poor
M	271—63 %	68—15.8%	91—21.1%
F	279—59.3%	101—21.4%	90—19.1%
M & F	550—61 %	169—19 %	181—20 %
M	346—80.5%	49—11.4%	35— 8.1%
F	371—78.9%	47—10 %	52—11.1%
M & F	717—79.7%	96—10.7%	87— 9.6%
M	286—66.5%	51—11.9%	93—21.6%
F	291—61.9%	52—11.1%	127—27 %
M & F	577—64.2%	103—11.5%	220—24.3%
M	173—40.2%	117—27.2%	140—32.6%
F	187—39.8%	137—29.2%	146—31.0%
M & F	360—40 %	254—28.2%	286—31.8%

Absolutely poor on appearance, height to age and weight to age: 48—5.3%.

Weight to height
Weight to age
Height to age
Appearance

others excluding the absolutely poor, weight to age coming next in accuracy, being followed by the Dunfermline scale. The least reliable test seems to be the height to age. Our classification of absolutely poor nourishment is the most stringent of all.

Tables 2, 3 and 4 represent the graphical description of the relation of appearance, height and weight to age. In Table 2 (on appearance) we find that the good curve shows the largest percentage of cases at the age of 2 years at which point it starts to drop until 3, remains almost stationary between 3 and 4 and then rapidly drops to 6, from which point it shows a rapid rise, which is continual. This corresponds almost to a detail with the poor curve which shows a bad start at the first year; the appearance of the children improved during the second year as demonstrated by the drop in this curve for that period. From this point it rises with continual progress up to the age of 6 at which time there is a return to better conditions as shown by a drop. The graph representing the fair in this table follows the same inclination as

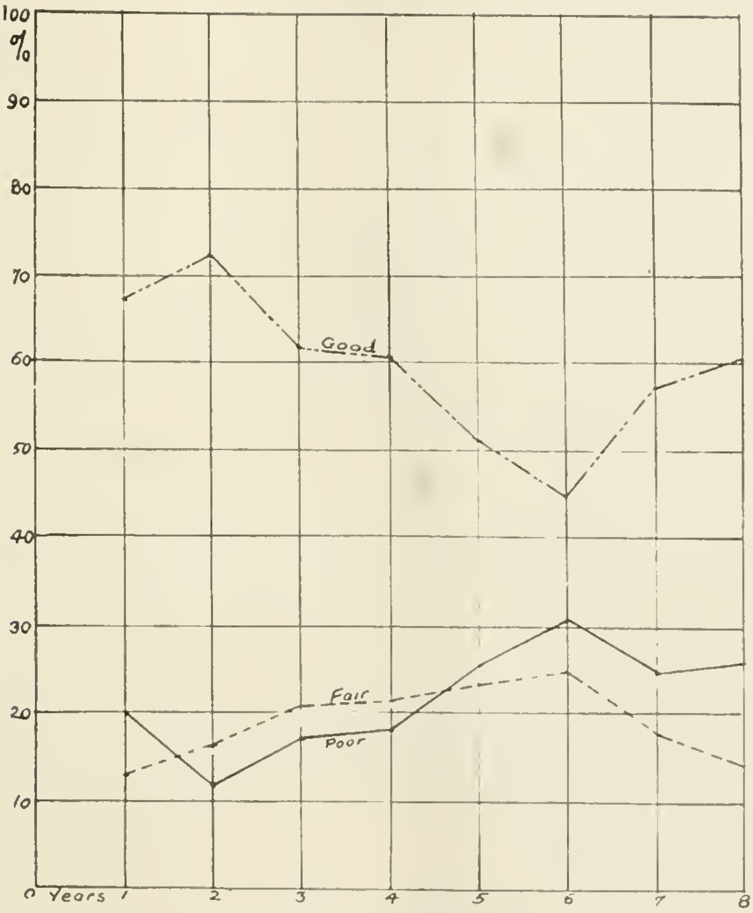

Table 2. Appearance.

the poor with not so marked a rise showing that the deflection and fall in the good curve is due more to the rise in the poor than to the fair.

Table 3 (on weight) presents the same characteristics in the fluctuations of the curve as noticed in the previous table, the lowest point of the good curve and the summit of the poor being reached at the age of 5 instead of at 6. The fair graph also shows less of an influence than the poor.

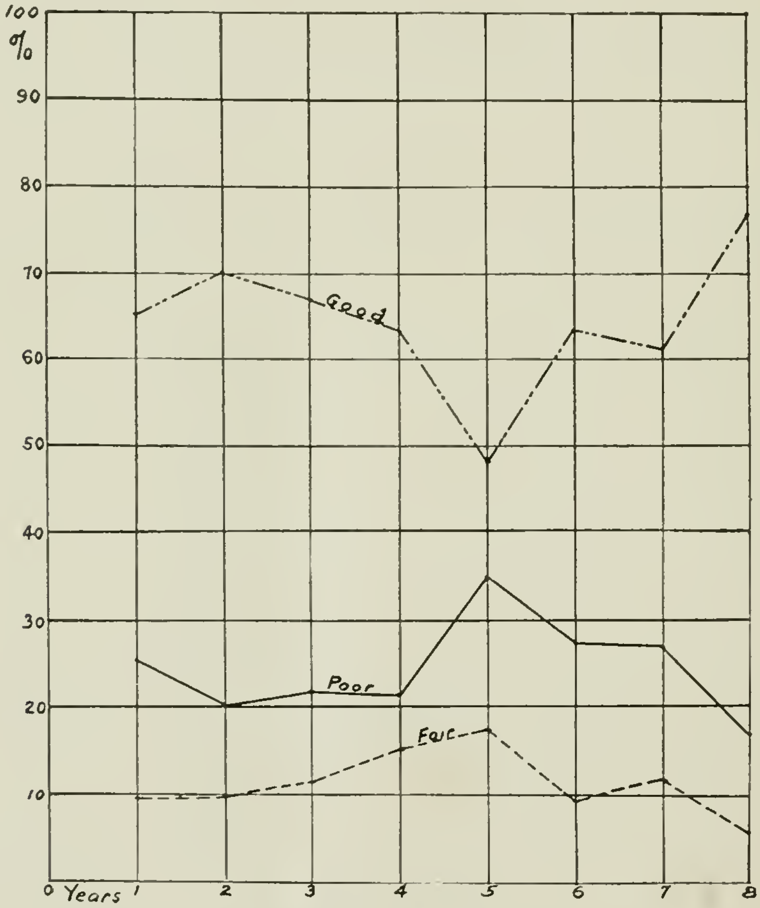

Table 3. Weight.

Table 4 (on height) shows the greatest fall at the age of 4, with a corresponding rise in the poor line.

A study of these graphs demonstrates that if we disregard the dangers of the first year, the most critical period in a child's early life is between the ages of 2 and 6. The deteriorating effect is demonstrable in the weight, the general appearance and to a smaller extent, in the height.

In seeking the causative factors of malnutrition in the children in this series, we must determine what conditions or dis-cases were present during this critical period. The causes of the deflection can be grouped under two headings: economical and physical. Since we did not have the facilities to follow up the cases, we are not in a position to dwell upon or discuss any possible factors like poor home surroundings, the influence of deficient or badly selected food, or any other social question. Bearing this in mind, we shall confine ourselves to the consideration of the physical forces. According to the findings of this series, we can classify the causative factors of malnutrition under 3 headings: (1) previous history; (2) condition present at the time of examination; and (3) nationality.

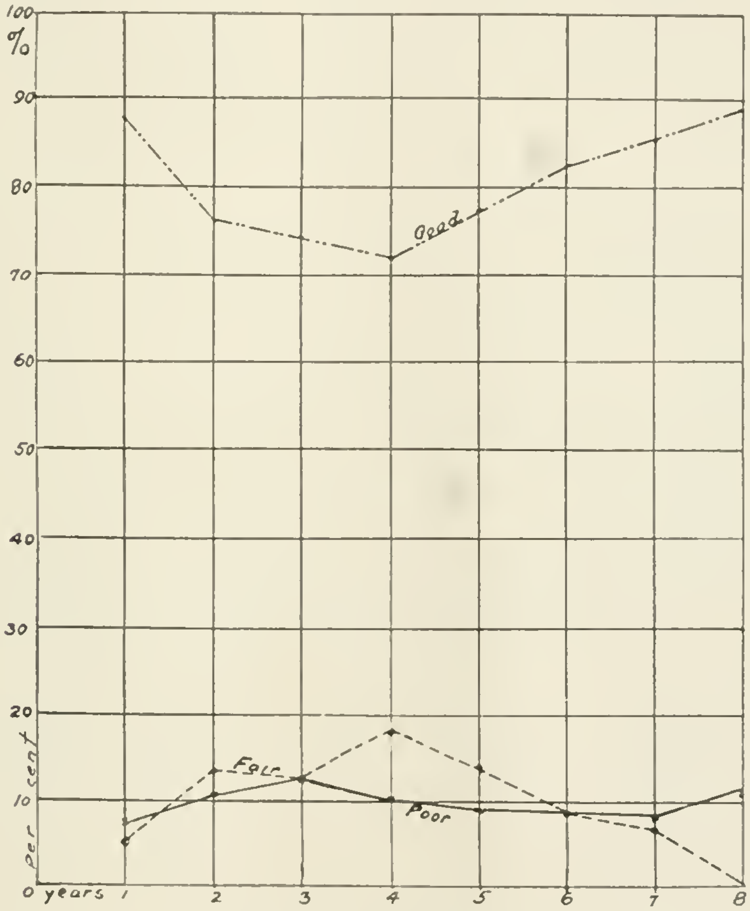

Table 4. Height.

Measles and pertussis were found to be the most common diseases in the past history and can therefore be assumed to be the most frequent causes in the production of the malnutrition from that view point. A history of pneumonia is the next in frequency. It may be that the more frequent occurrence of contagious diseases between the ages of 2 and 6 years may have a marked influence on the subsequent physical condition. A past history of measles was obtained in 239 cases, a figure which is probably too low. Of those who gave this history, we found that 59 per cent. were graded good on appearance, 20 per cent. fair, and 21 per cent. poor, showing that in 41 per cent. (on appearance) the occurrence of measles probably had a deteriorating effect on the future welfare of the child. Of those who were relatively poorly nourished, 27 per cent. gave a history of having had this disease.

The incidence of pertussis was not as great as that of measles. We obtained a past history of 102. Of this number. 61 per cent. were among the children graded good, 23 per cent. as fair and 15 per cent. as poor, showing, that in 38 per cent., the occurrence of this disease probably had a deleterious effect on the future development of the child. Of those who were relatively poorly nourished (our classification) 10.5 per cent, gave a past history of pertussis.

Table 5.—Abnormalities found in relatively poorly nourished. (181 cases.)

Adenoids and tonsils	97
Defective teeth	59
Gastroenteritis	46
Organic heart lesions	23
Rickets	17
Enlarged cervical glands	19
Functional heart	7
Tuberculosis	5
Lordosis	6
Mental deficiency	4

Table 6.—Relatively poorly nourished on appearance gave a history of:

Measles	49 cases	27.1%
Pertussis	19 cases	10.5%
Diphtheria	9 cases	4.9%
Scarlet fever	7 cases	3.8%
Pneumonia	17 cases	9.4%

Scarlet fever and diphtheria do not show so marked an incidence, probably being explained in that the damage done by the latter two diseases is more pronounced in the acute stage than at a subsequent time.

The most frequent defects found at the time of examination were as follows:

Adenoids and hypertrophied tonsils	375	(41%)
Defective teeth	179	(11%)
Functional heart	30	
Organ heart lesion	44	
Gastroenteritis	75	
Cervical adenitis	46	
Rickets	39	

The figures for carious teeth are lower than that reported by other examiners. The reason probably lies in the lesser occurence of this disorder in children under 7 years of age. Almost 50 per cent. of our children were under 4 years old.

The probable effect of abnormal heart conditions on appearance, height and weight are seen in the following table. There were 74 cases, or 8.5 per cent. of the total number examined, which showed some variety of cardiac disorder. Almost 60 per cent. of these were below good on appearance and about 50 per cent. below good on weight. We found that of the relatively poor on appearance, 16 per cent. had some form of heart abnormality. The effect on height was small, only 12 per cent. of the affected being poor on height. Organic lesions of course were more injurious than functional conditions.

To show the probable effect of heart disorders:

	On appearance		On height		On weight	
	Functional	Organic	Functional	Organic	Functional	Organic
Good	12	16	24	30	18	17
Fair	11	5	3	8	5	7
Poor	7	23	3	6	7	20

The influence of nationality in its bearing on height and weight can be seen from table 7. In keeping with the contention of Manny, Holt and others, malnutrition is found to be more prevalent among the children of the native born than foreign born. This is not so pronounced in our series, for the American children show only 2 per cent. more of an incidence on poor on appearance than the Italian, but 8 per cent. more than the Irish and miscellaneous foreign born. The Italians and miscellaneous, that is, German, English, Jewish, etc., are the poorest on height. The Italian and American girls are not as good as the boys on height. There is not much of a national influence on weight, according to the findings of this series, except that the Irish girls are poorest in this respect with the Italian girls next on underweight.

We wish to extend our thanks to Mr. Arthur E. Wakeman, the general Secretary of the Brooklyn Children's Aid Society for his assistance and endeavors which made this work possible, to the medical and nursing staffs of the Seaside Home for their help and to Mr. Jacob Rosenfield for the mathematical calculations, tables and graphs.

Table 7.—On nationalities. By percentage.

	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
M	69.3	13.8	16.8	79.2	13.9	6.9	64.3	18.8	16.8
F	59.6	25.0	15.4	80.8	10.6	8.6	54.8	12.5	32.7
M & F	64.4	19.5	16.1	80.0	12.2	7.8	59.5	15.6	24.9
M	63.1	15.9	21.0	86.2	7.3	6.5	74.7	5.8	19.5
F	58.4	17.9	23.7	74.0	11.0	15.0	63.6	12.1	24.3
M & F	60.5	17.0	22.5	79.5	9.3	11.2	68.5	9.3	22.2
M	53.6	20.0	26.4	78.9	13.7	7.5	61.1	15.7	23.2
F	57.0	21.0	22.0	82.0	8.0	10.0	62.0	10.0	28.0
M & F	55.4	20.5	24.1	80.5	10.8	8.7	61.5	12.8	25.7
M	65.6	13.5	20.9	75.0	12.5	12.5	62.5	9.4	28.1
F	63.4	24.7	11.9	82.8	9.7	7.5	66.6	8.4	24.7
M & F	64.6	19.0	16.4	78.8	11.1	10.1	64.5	9.0	26.5
Miscellaneous		U. S.			Italian			Irish	

CONCLUSIONS

1. In the examination of 900 children under the age of 8 years for nutrition as shown by appearance, weight and height, we find that the weight to height basis is the most reliable standard of judging nutrition. Next in value is the weight to age relationship and then the general appearance. Our figures show a higher rate of malnutrition than others which have been published for children in large cities. The explanation for this may be that the children of this series were practically all referred to the Home because it was thought that, due to their home surroundings and their physical condition, they were in need of a vacation away from their usual environment. The classification of the poorly nourished by being divided into the relatively and absolutely poorly nourished lessens considerably the incidence of those requiring urgent medical care and treatment.

2. The most critical period in a child's early life is between the ages of 2 and 6 years.

3. The chief causative factors of malnutrition in this series are environment and disease, the latter being considered from the view point of previous history and condition at the time of examination. A previous attack of measles, pertussis and pneumonia were found to have a deleterious effect, in the order named, on the subsequent life of the child. Scarlet fever. diphtheria and other contagious diseases apparently had little effect on the general health after recovery. Conditions present at the time of examination, which can be considered as causes of malnutrition, were adenoids and hypertrophied tonsils, defective teeth, gastroenteritis and heart lesions, in the order named. Nationality had some effect on nutrition.

4. The degree of nutrition present in a child should not be judged by one standard alone but by a comparison of two or more.

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REPORT OF A CASE OF HEPATOMA IN AN INFANT*

By Martha Wollstein, M.D., and Harold R. Mixsell, M.D.

New York.

A. D., born September 4, 1917. First seen January 11, 1918. at 4 months of age, at the Babies' Hospital Dispensary.

Family History. Father and mother both living and well. Four children living, all well. There have been no miscarriages. No family history of cancer, tuberculosis, alcoholism, or rheumatism in parents or grandparents on either side. Mother's mother, who is still living, has diabetes.

Past History. The pregnancy was a normal one. Labor was normal, non-instrumental and lasted 1 hour. The baby was normal at birth, weighed 7 pounds, and there was no asphyxia, cyanosis or convulsions. There have been no past diseases.

Feeding History. Breast fed for 3 weeks when mother's milk gave out. Then put on a formula of milk, 20 ounces; oatmeal water, 20 ounces; milk sugar, 3½ level tablespoonfuls. Of this 4 ounces were given every 3 hours, 8 feedings a day. The baby was kept on this for a month when the milk sugar was changed to dextri-maltose No. 1, and 1 tablespoon of limewater was added to the mixture. There was no further change until seen at the Dispensary. The baby seemed satisfied with this feeding, the bowels had the tendency to be constipated, she vomited very occasionally, slept well, and only wakened for the bottle. The weight had not been taken. For the past 3 days there had been vomiting about twice a day. One week ago the baby had what the mother described as a "convulsion," due she thought to the constipation. There had been a slight cough for the past 4 weeks, not getting worse, and the baby had been kept out of doors in good sanitary surroundings.

Present History. The mother brings the baby in for dietary suggestions, and on account of a lump, first noticed at 3 months, under the right lower rib, anteriorly. This she had noticed while bathing the baby, and said it was about the size of a peanut.

Physical Examination. A poorly nourished, sallow-looking baby of about 4 months of age. Cannot hold up head un-

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*From the Babies' Hospital Dispensary, The New York Nursery and Child's Hospital, and the Laboratory of the Babies' Hospital.
Clinical history by Harold R. Mixsell, M.D.; pathology by Martha Wollstein, M.D.

supported. Anterior fontanelle open 2 cm. in diameter. Posterior fontanelle closed. Eyes, ears, nose and throat are all negative. Heart and lungs are normal with the exception of a few scattered subcrepitant râles at both bases. There is no adenitis. The skin is pale, with a fine generalized maculo-papular rash all over the body. There is no distention, rigidity, or tenderness in the abdomen. Both liver and spleen are palpable below the costal margin. At the lower border of the liver is felt a nodule about 2 by 3 c.m. in diameter, smooth and hard. The reflexes are normal. There are no deformities noted. The weight is 10 pounds, 14 ounces; the length, 58 cm.; the head, 40 cm.; the chest, 35 cm.; the abdomen, 40 cm.

At this time the diagnosis of feeding case was made on account of the feeding history, vomiting, etc. The baby was put on a weak skimmed milk mixture and the mother told to report twice a week for its examination. No definite diagnosis was made in regard to the nodule and the enlarged liver and spleen. The formula was gradually increased to a whole milk formula of milk, 18 ounces; barley water, 17 ounces; dextri-maltose No. 1, 2 level tablespoons, and 5 ounces were given every 3 hours, 7 feedings a day.

This formula evidently suited both the baby and the mother as we did not see them again for 6 weeks. For the 3 days previous, the baby had been running an irregular temperature. The temperature when seen was 103.4°, the weight was 11 pounds and 5 ounces, and examination revealed a double bronchopneumonia. She was referred to the New York Nursery and Child's Hospital for treatment.

During the course of the physical examination a large mass was immediately discovered in the abdominal cavity. This was taken to be liver. The lower border extended into the right iliac fossa and the mass practically filled the entire abdomen. It was hard and elastic and small smooth nodules could be felt on it. The spleen was palpable at the costal margin. The kidneys were not felt. There was no ascites. In this connection it is interesting to note the extremely rapid course of this abdominal condition, the liver enlargement progressing in less than 2 months, from just below the costal margin to the symphysis pubis.

Laboratory Findings. Urine, straw colored, acid, 1015, no albumen, no sugar, no indican, acetone or diacetic acid; microscopic examination negative. Wasserman reaction on parents and baby was negative twice, von Pirquet was negative on several occasions. The hemoglobin was 80%; red blood cells, 4,300,000; white blood cells, 19,300; polymorphonuclears, 28%; large lymphocytes, 8%; small lymphocytes, 64%. On these findings and the history, a diagnosis of congenital sarcoma of the liver, *probably primary*, was made. The child was treated for her broncho-pneumonia, from which she made an uneventful recovery, and was discharged from the hospital April 11. By this time the liver mass had entirely filled the abdomen. An x-ray examination revealed a large mass as noted.

The child was admitted to the Babies' Hospital on May 24, 1918, at the age of 8½ months, in an extremely emaciated condition. The abdomen measured 41 c.m. in circumference at the xiphoid cartilage and 35 c.m. at the umbilicus. To the left of the costal angle the ribs were pushed forward by pressure of the abdominal mass, which had pushed the diaphragm upward. The abdomen was markedly distended, and the superficial veins prominent. In the median line and a little to the left, just below the sternum, there was a nodular fluctuating swelling 2½ by 3 c.m. in diameter. On the right side, there was a firm, irregular mass extending from the brim of the pelvis upward to the diaphragm and apparently connected with the fluctuating mass mentioned above. There was tympany to the left of the mass. The edge of the liver could not be made out but the spleen was palpable. In the left groin were 4 bluish nodules attached to the skin, the largest ½ c.m. diameter.

May 25, 1918. The child had been practically moribund since admission and refused most of the feedings.

May 27, 1918. Death occurred quietly at 5 a. m.

The autopsy was performed 5 hours after death. The body was that of a white, emaciated, female infant, with a distended abdomen. There were 4 small, hard nodules adherent to the skin in the left inguinal region; ulceration had not occurred. The cut sections of the nodules were soft.

Chest. There was no pleurisy. The right lung was well aerated. Acute broncho-pneumonia was present in about half of the left lower lobe. In the upper lobe, on the outer surface just below the apex, was a hard, white nodule 3 m.m. in diameter, evidently a metastasis. Bronchial and mediastinal nodes were not enlarged.

Heart. Normal.

Abdomen—20-30 c.c. of thin fluid blood in the pelvic cavity. The intestines were pushed entirely to the left and the stomach was almost vertical. This change in position was due to the greatly enlarged liver.

Spleen—Measured 7 by 4½ c.m. It was slightly enlarged but contained no nodules.

Adrenals. Normal.

Kidneys. Lobulated. The markings were slightly blurred. No metastases were present.

Stomach and intestines. Normal.

Liver. Weighed 860 gm. and measured 18 c.m. in length by 17 c.m. in width. (Fig. 1.) The upper surface was nodular, pale and fatty. The anterior border of the organ was rounded and thickened by a neoplasm which showed through the capsule as small, rounded, greenish masses with dilated vessels between the nodules. The right border showed normal liver substances compared with the fatty condition of the rest of the organ. The posterior border was nodular, entirely made up of neoplasm. The left lobe was filled with tumor nodules, leaving only a compressed border of liver substance 1 c.m. in breadth and less than ½ c.m. in thickness. (Fig. 2.) The lower surface of the liver was for the most part made up of new growth. The Spigelian lobe was compressed and the caudate lobe was normal. The gall bladder was a pear-shaped bag ½ by ½ c.m. in diameter. The ducts were large, easily probed and contained bile. On section, the growth was soft, for the most part bile-stained, with many small hemorrhagic and softened areas. The main mass was in the anterior half of the liver. In the posterior portion the nodules were less bile-stained, more hemorrhagic, and in some places white in color. Between the nodules and the liver substance, there was no capsule, but a compressed mass of liver tissue separated the two and in places simulated a capsule.

Anatomical Diagnosis—Hepatoma; Pulmonary metastasis; Acute broncho-pneumonia; Subcutaneous inflammatory nodules.

MICROSCOPIC EXAMINATION

The liver capsule was intact and a narrow zone of normally staining liver tissue was apparent. Adjacent to this there was a layer in which the liver cells gradually took the stain less deeply, became more translucent, but still retained the shape and size of the ordinary liver cell. A comparatively small number of the cells had lost their nuclei. The arrangement of these lighter cells was in the form of columns, as in normal liver structure; but lobules could not be outlined. Connective tissue was small in amount and carried comparatively large vessels. This zone was looked upon as a layer of changed liver substance. Next to it lay connective tissue, fibrous in character, carrying small blood vessels and small bile ducts. The connective tissue layer did not surround the entire tumor, and next it an irregular and narrow zone of cirrhosis was found. It separated the normal and changed liver substance from the tumor proper, which was composed entirely of epithelial elements approximating the liver cells in size, shape and character. (Fig. 3.) These cells gave an indication of columnar arrangement, but again distinct lobular outlines could not be distinguished. Small blood vessels between the columns of cells were full of red blood cells. Diapedesis was present at several points, but pressure atrophy had not occurred. Comparatively few of the neoplasmic cells contained fat drops. Slits between the cells (bile capillaries) contained pigment. Large blood spaces were apparent in the tumor and they were filled with red blood cells and comparatively few leukocytes. Their walls were exceedingly thin, and hemorrhages were numerous and large.

In another portion of the tumor the thick connective tissue septa formed a more or less lobular outline within which the cells were arranged in columns and groups. Vessels with a very thin wall and a large lumen simulated the normal central vein, and invariably contained red blood cells or thrombi. Fat droplets were present in many of the cells in this portion of the growth, while the connective tissue carried structures which resembled bile ducts. Except for the absence of lobular arrangement, the tumor substance simulated liver structure.

The green color of the nodules is explained by the presence of pigment-filled bile capillaries in the tumor. Ribbert[1] calls attention to this condition.

The metastasis in the lung was separated from the lung substance by a thin layer of connective tissue. (Fig. 4.) The nodule lay just beneath the pleura and was covered by it.

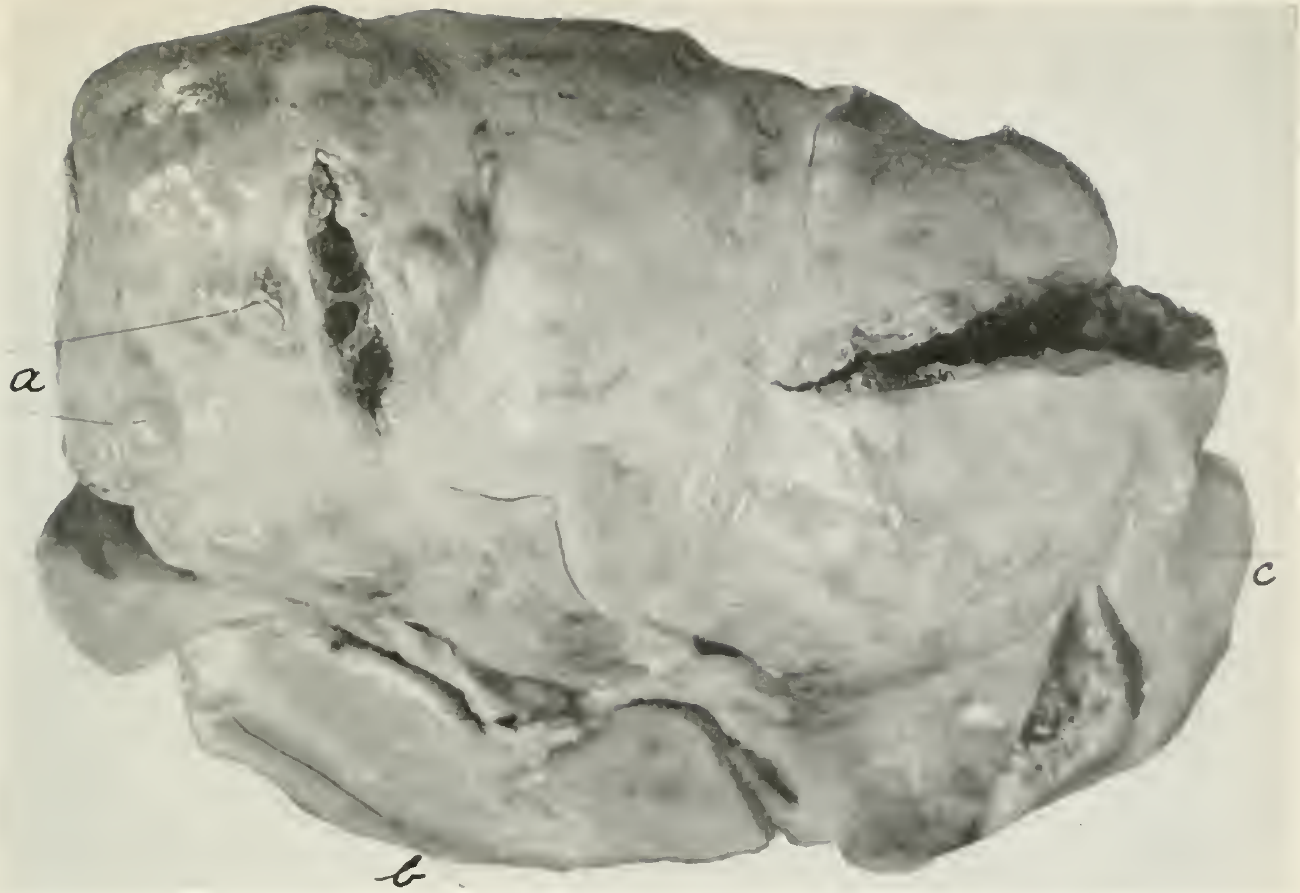

Fig. 1.—Upper surface of liver showing nodules (a), rounded anterior border (b) and thin strip of normal liver tissue (c).

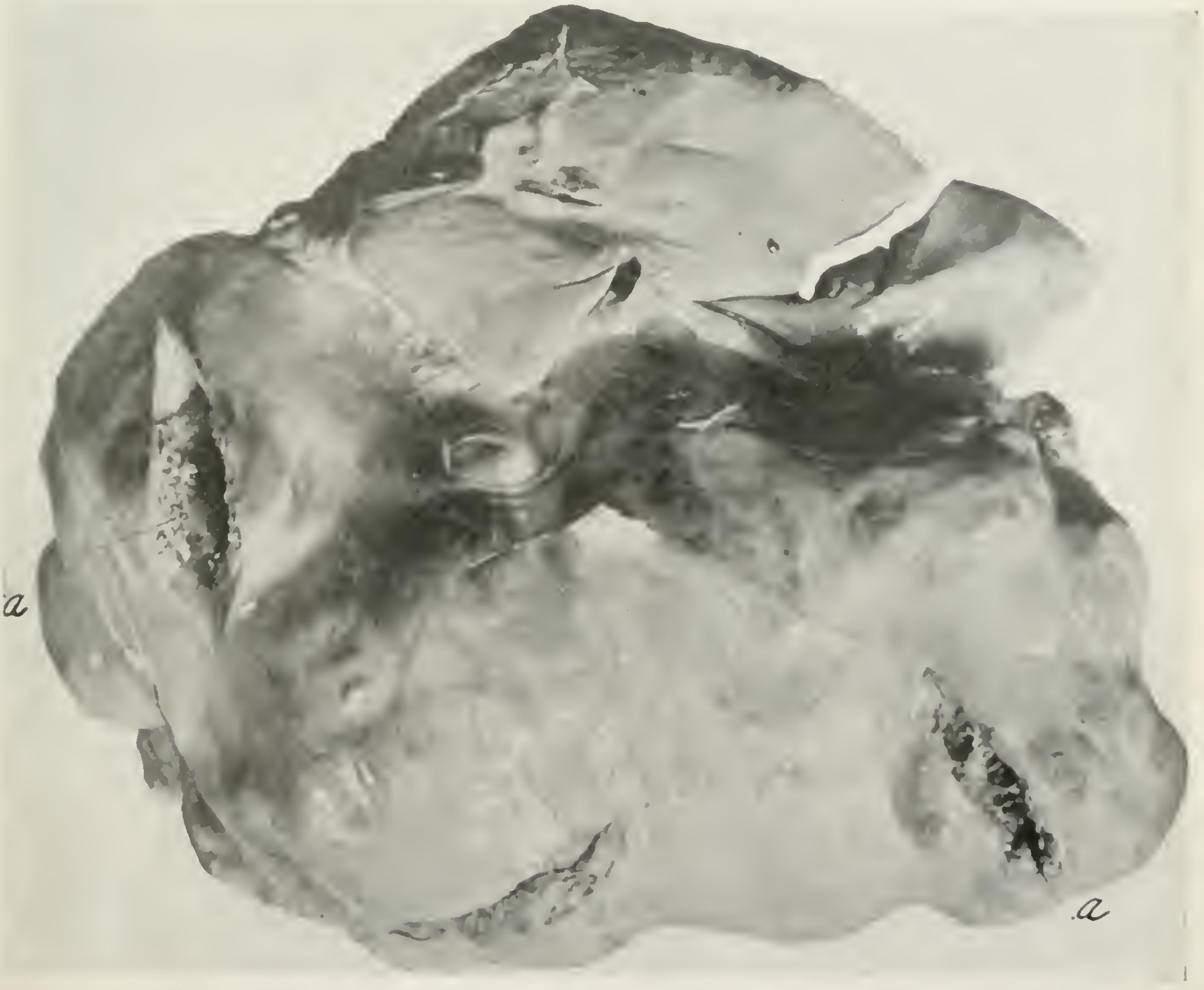

Fig. 2.—Under surface of liver showing hemorrhagic areas (a).

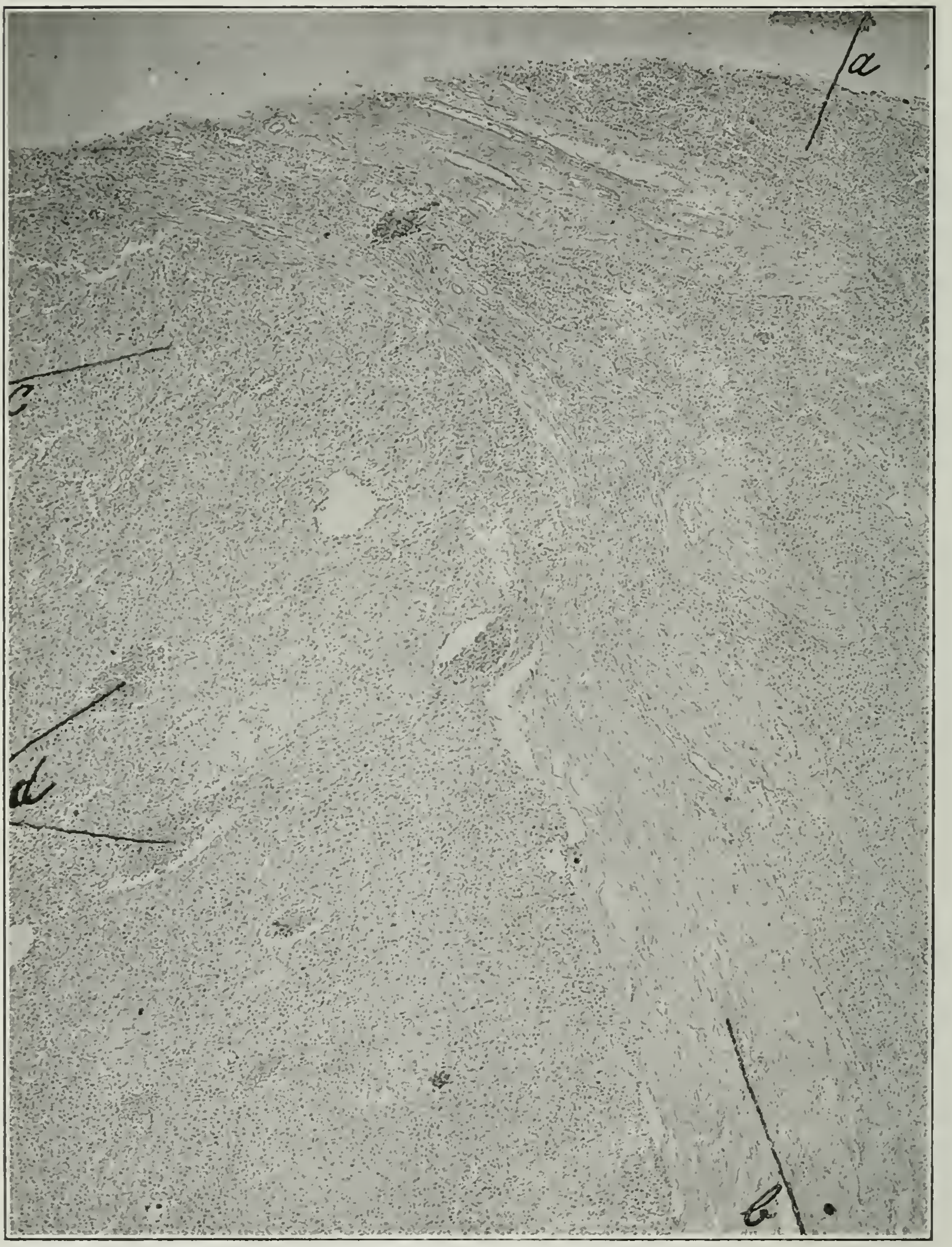

Fig. 3.—Section of tumor, X60. (a) liver substance, compressed; (b) connective tissue layer; (c) tumor substance; (d) blood spaces.

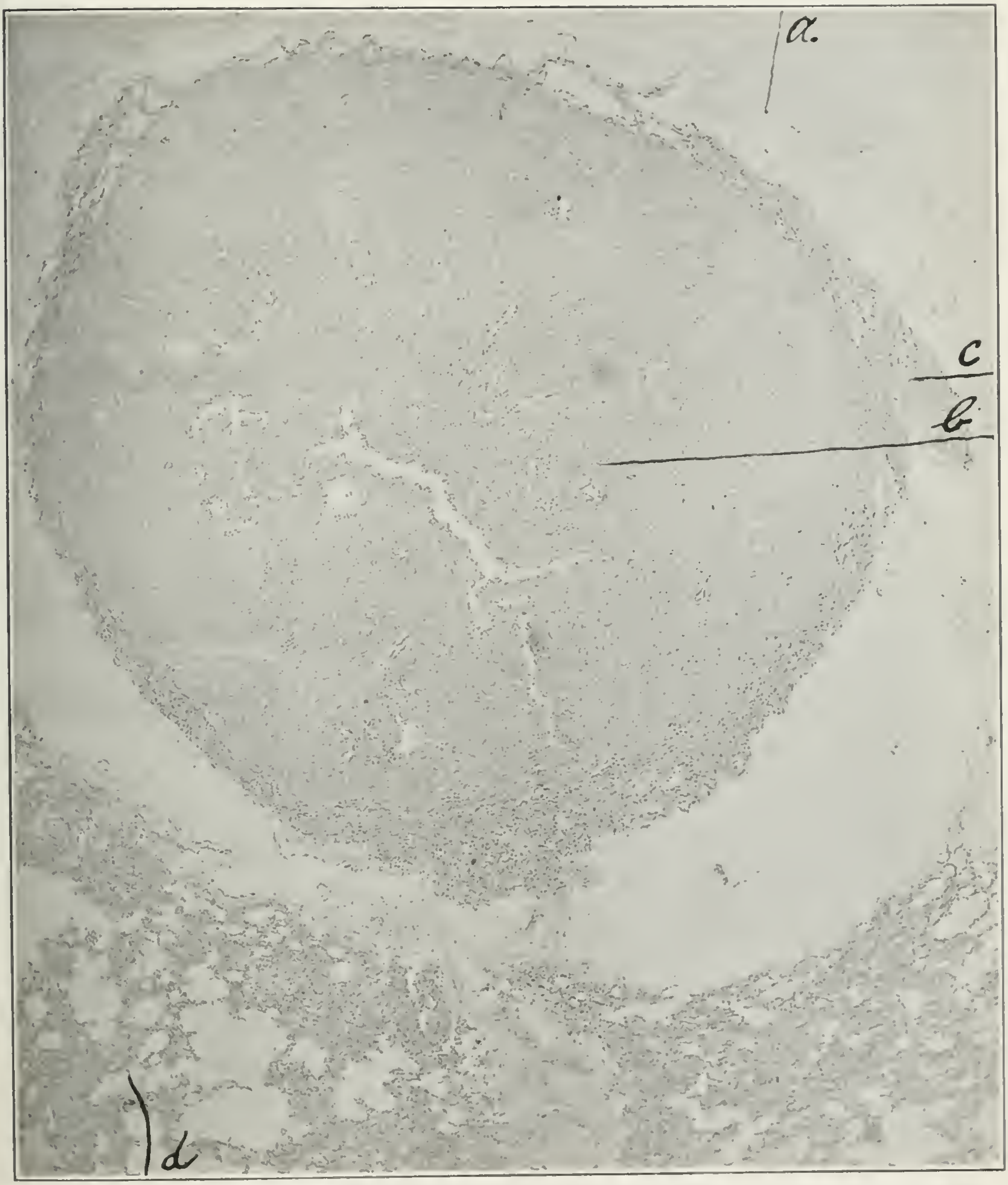

Fig. 4.—Metastasis in lung. (a) pleura; (b) nodule in which lobular arrangement can be made out; (c) compressed lung tissue at periphery of metastasis; (d) lung in good condition.

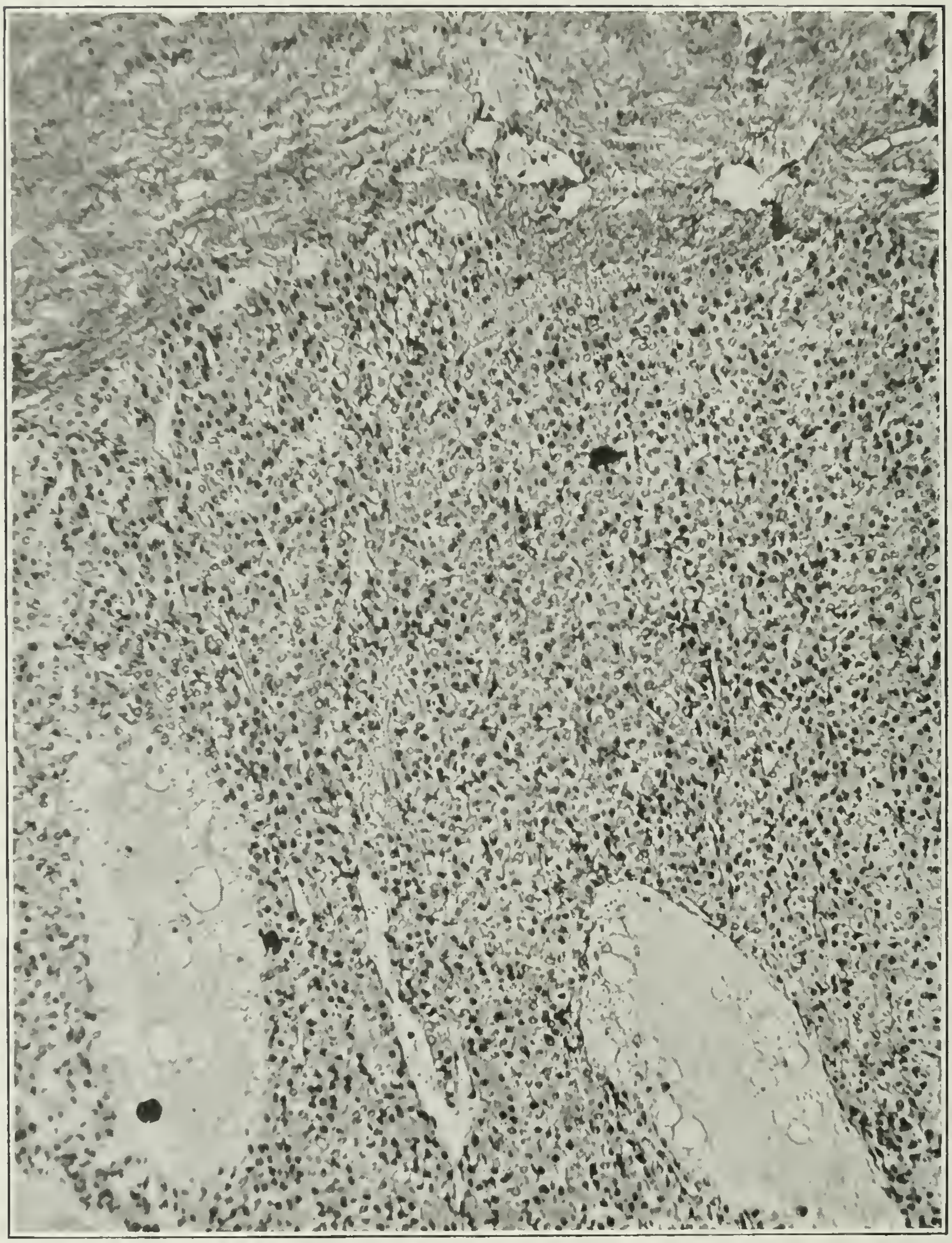

Fig. 5.—Higher magnification of portion of Fig. 3, showing columnar, but not lobular, arrangement of the large tumor cells.

Epithelial cells like those in the tumor proper, but slightly smaller in size, made up the metastatic nodule, in which no fatty or other degenerative processes had occurred. The blood vessels between the cells were comparatively large, and full of blood cells; but there was even less lobular appearance here than in the liver mass. Between individual cells slit-like bile capillaries were apparent, with a small amount of pigment in some of them. The lung substance beyond the metastasis was normal.

The suprarenal bodies on both sides were normal. Lymph nodes showed no evidence of metastasis.

Doctor Ewing very kindly examined our sections and pronounced the tumor a primary one of the liver cells with the power of neoplastic change not very marked, in spite of the metastasis. The tumor grew to be very large; emaciation, cachexia and death resulted 6 months after a nodule had first been noticed.

The neoplasm was a primary epithelial growth of the liver, probably congenital, and clinically undoubtedly malignant.

Primary hepatomata are rare in children. They are either adenomatous or carcinomatous in type. Rolleston[2], in 1912, accepted as authentic but 16 primary liver carcinomata recorded in children. Since then, cases have been reported by Castle[3], de Saussine[4] and Frolich[5]. Griffith's[6] case originated in the bile ducts, while those reported by Freeman[7] and Tate[8] are incomplete.

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A CASE OF SCURVY WITH CEREBRAL HEMORRHAGE*

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New York.

Deaths from scurvy are comparatively few and the literature contains very few reports of autopsies. The only references that we were able to find regarding cerebral hemorrhage in scurvy are: 1. New York Medical Journal, June 25, 1910, in which C. A. Fife says—"Hemorrhages in the hard palate, throat, stomach, intestines, bladder and any surfaces, are common; extravasations have been found in the lymphatic glands, lungs, liver, spleen, kidney and *brain;* many cases of blood stained pleural effusion are on record." 2. American Journal of Diseases of Children, December, 1914, in which Hess says—"Finklestein mentions that hemorrhage has been found postmortem in the dura mater. In one of our cases (L.S.), in which convulsions supervened in the course of the disease, the blood-tinged cerebrospinal fluid led us to believe that we were dealing with a case of this nature."

The report of our case follows:

H. W., age 1 year. Admitted to hospital on April 21, 1919. Foundling. No family history or birth history. Has been under the care of the boarding-out department for 11 months. No previous illness. Has always been malnourished. Artificially fed, on modified milk formulas. For past month, has been having cereal, broth and vegetable. Has been getting juice of half an orange since 6 months of age. Gaining weight very slowly. Appetite and stools good. No vomiting.

Brought to hospital by foster mother because child has been fretful and listless and was having fever for past 3 or 4 days. About February 25, 1919, the visiting nurse noticed that the child's gums were swollen, but attributed it to dentition. The swelling of the gums however, persisted up to the time of admission to hospital.

On admission: Temperature, 104°; respirations, 40; pulse, 120; weight, 11¾ pounds.

The temperature ranged between 101° and 105° while in the hospital.

Treatment: Diet: Whole milk and broth, orange juice, 4 ounces a day, sponge for temperature of 103°, daily colon irrigation. Mustard paste to chest every 4 hours.

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*From the New York Nursery and Child's Hospital.

PHYSICAL EXAMINATION ON ADMISSION, APRIL 21, 1919.—*General Condition*: Female negro child. Acutely ill. Malnourished. Dyspneic, grunting respiration with dilatation of alae nasi. Lies with thighs flexed on abdomen and rotated outward and legs flexed at knees.

Head: Large, "boxy." Large anterior fontanel. Craniotabes. Sutures not ossified.

Eyes: Pupils regular, equal, react to light and accomodation, no nystagmus or strabismus.

Ears: Normal.

Mouth: No teeth, upper and lower gums swollen and red, purple color at site of incisor teeth.

Lymph Nodes: Not enlarged.

Thorax: Rosary and Harrison's groove. Respiration rapid.

Lungs: Over both bases posteriorly and in axillae, there were numerous fine and coarse, moist and dry râles. No change in percussion, breath sounds or voice sounds. Over the rest of the chest signs were normal.

Heart: Not enlarged. Sounds regular, rapid and of poor quality.

Abdomen: Distended, tympanitic, umbilical hernia. Liver palpable, 1 finger below ribs. Spleen not felt.

Genitals: Normal.

Skin: Dry and hangs in folds.

Extremities: Epiphyses enlarged. Both knees swollen, the left about ½ inch greater in circumference than right. Marked tenderness over both knees and thighs.

CLINICAL PATHOLOGY.—*White Blood Counts*: April 22, 1919, 10,000; polymorphonuclears, 55%; lymphocytes, 45%.

April 27, 1919, 19,000; polymorphonuclears, 51%: lymphocytes, 49%.

Urine: Examination April 22, 1919, straw colored; acid; albumen negative; sugar negative, microscopic negative.

April 28, 1919, amber; acid; albumen trace; sugar negative, microscopic few red blood cells, few white blood cells.

April 23, 1919—von Pirquet, negative.

April 22, 1919—Vaginal smear negative for gonorrhea.

April 22, 1919—Nose and throat culture, negative for Klebs-Loeffler bacilli.

April 24, 1919—Wassermann, negative.

X-ray on April 24, 1919.

Chest: Negative.

Extremities: Destruction of the distal end of epiphyses of both femurs. Apparent separation of the periosteum of the femurs starting at the distal end and extending about to proximal third of the bones. There is a shadow between the periosteum and the bone.

Course of the Case at the Hospital.—The râles in the chest cleared up in 5 days and no other signs ever developed in the chest. The gums improved somewhat; the swelling decreasing, but the purplish red discoloration remaining. The swelling and marked tenderness of the knees and thighs persisted with slight improvement.

At 7:00 A. M., May 1, 1919, child had a general clonic convulsion which lasted about 15 minutes. Then child became unconscious and died at 11:00 A. M. Lumbar puncture at 10:00 A. M., 30c.c. clear fluid obtained under pressure. No globulin. Cell count 6.

Autopsy Findings, May 1, 1919.—Thymus, normal; heart normal; lungs, normal; liver, enlarged one inch below costal margin showed fatty degeneration; spleen, swollen, with hemorrhages into the parenchyma; kidneys, congested, capillary hemorrhages; gastrointestinal tract, normal; brain and meninges, flattening of the convolutions, congestion of cortical vessels; blood clot 2½ inches long and ½ inch wide over the post-central gyrus, left side between the dura and arachnoid.

Bones and Joints: Fluid blood in both knee joints. Complete destruction of distal end of epiphyses of both femurs and proximal epiphyses of both tibiae; subperiosteal hemorrhage extending up both femurs almost to greater trochanters. Hemorrhage in the bone marrow of femurs.

44 *East 63rd Street.*

MENTAL AS WELL AS PHYSICAL THERAPY FOR CHILDREN.

By Dr. Eleanor I. Keller.

New York

When any bodily ill besets the child. the medical man is immediately called, and the trouble diagnosed and the necessary steps taken to bring about a remedy. Mental ills are now being considered in the same wise way by parents and physicians, who are awake to the mental as well as physical needs of developing humanity. The child that is misunderstood, and who is placed with others but fails to make progress with the group, though at home he may appear to be as bright as other children, calls for a mental diagnosis and adjustment. The sooner this is made the better for the child. Every day spent in the group, to which he is maladjusted, means a loss to his intellectual nature, no progress being made. It affects his emotional nature still more because despair, dissatisfaction, dislike of work and of those who require it of him, grow until the disposition is affected, possibly for life. His will, too, suffers. That great power, that ought to speed him up and lead him gladly to action, is also weakened, because the emotional set that should accompany action makes action repellent to him.

I recall the case of a small boy brought to me by his anxious and intelligent father. A physical examination showed nothing. He was a well nourished boy of 7½ years of age. He was affectionate and intensely interested in machinery and every kind of constructive work. He would invent, and carry out his ideas with consummate skill, thereby showing the fundamental powers of mind, observation, comparison, memory and attention, as well as reason and judgment. All mental reactions were normal in relation to a set of conditions that appealed to his interest and abilities. The father's chief cause of complaint was that the boy was restless, nervous and was making no progress in school. He had a sister several years older, and she had read and ciphered almost with her first efforts. Her brother had made no progress in these subjects, though he had been to school nearly 2 years. On examination the boy was found to be left-handed and the school was forcing him to use his right hand. He passed the standardized intelligence tests for a boy of his years, showing no intellectual retardation, in fact his verbal responses were above the normal, showing keen observation and verbal insight. When correlated tests of doing were given his attention, interest and concentration were equal to a boy of 10, as were also his judgment and comparison. He always reasoned out a situation and persisted until it was successfully accomplished.

The trouble is in the school's curriculum—it is not based on the mental age and needs of pupils, nor does it take into account types or groups of varying abilities. Members of groups develop differently, but in the long run all are expected to reach the same goal—adult life. For instance, there are 2 very distinct types—one might be called the literate type, the other the non-literate type. The first takes to reading and sometimes number work, as ducks to water. They will learn to read or cipher with any method or with any teacher. The second group is not attracted to reading or number work until much later in life, sometimes the eighth or tenth or even twelfth year. They then realize there are things in books that will help them in their problems, which are generally of a concrete nature. They are observing, reasonable, and show fine judgment in all the affairs of life at home, in their sports, and in those subjects in school where the technique of reading is not involved. When they read they are very intelligent, for they are not after words but are seeking the content of the words—the real thought that will help them in life. This boy cited above belonged to this second group. But in addition he was left-handed and the school generally stops all expression along the larger musculature, which before school days had been so free, and centers all action on the little muscles which wag the tongue and move the hand. As nature meant the child to be left-handed, this boy had an added difficulty to meet. He had not only to suppress all activity of body—and you recall he was the non-literate type; active, inventing, constructing, doing—but he had to reverse the order of all his actions of hand, by making them right-handed instead of left. His whole nervous mechanism was thrown out. He was awkward, unsuccessful, and incapable of keeping up with his peers. The subjects too, that called for constant use of this hand, were the subjects which were least attractive to his particular type of mind. At home, while there had been some nagging, some insistence on the use of the right hand, when shaking hands or serving himself at table, there was more or less freedom to use the left hand when constructing, working or playing with toys or games. These activities were not disturbed by maladjustment. The successful accomplishment led to the development of the nerve centers controlling the left hand, and there was little development of those controlling the right hand. The speech centers, being on the same side as the left hand, were thrown out of action, and stuttering ensued. The writing in school of words, numbers, etc., being a highly intellectual process, the strain by turning suddenly from the developed left to the comparatively undeveloped right, led naturally to nervousness, awkardness, restlessness, inattention, and discouragement, with its accompanying weakness of will.

The parents were greatly relieved to know their boy was mentally quite abreast of boys of his age, and were warned to notify the school that the left hand and not the right was the one to be used in writing, drawing, etc. While the boy may not learn to read at once, his nervous tension will cease, his stuttering will decrease, he will be at ease and able to imitate readily by use of the left hand, which nature meant him to employ. His attention, concentration and interest will increase, and, because thus encouraged, the will to do and try will develop, and physical and mental progress be made.

Another case is that of a little girl about 7 years of age. Five years ago she had poliomyelitis. When the disease had spent itself, the child was kept in the country, and, aside from a short period when a nurse trained her in subjects as abstract as reading and numbers, all of which she forgot when teaching ceased, her mental development was left to take care of itself. On being examined she passed a test of about 4 years' level. Her speech was very indistinct, her coördination of hands and eyes was very poor, her walk was a drag. She went about the room taking down pictures, opening drawers, picking up ornaments, aimlessly handling anything that she saw. Her power of attention and concentration was so very flighty, that the simple problems of the fifth year were hardly grasped. The large form board was attacked but the method was that of trial and error, each piece being moved along from hole to hole till it chanced to drop into its place. Only 5 holes out of 10 were filled. After a rest the form board was tried again. Memory and some slight tendency to comparison led to greater success. The dynamometer and other tests showed her stronger on her left than her right side, but this was weak, and when fatigue set in she shifted to the right hand. She was well oriented in time, never failed to tell you the day of the week, had a keen interest in color, and was familiar with all the common colors, even discriminating some tints and shades. She could not copy a square or a diamond, and scrawled meaningless lines, more like a child of 2 than one of 7 years. Her memory was good, surprisingly good for names of objects, people animals and events that interested her. She had quite a sense of humor, a sunny, happy disposition and physically she was sound and regular in her habits, attractive in appearance, with no stigmata. She had been under training for a few weeks. The method followed was based on expression and connection with the world through activities suited to her mental age. These were not only planned so as to bring about coördination of hands and eyes and feet and legs, etc. but, being within her mental grasp, won her attention and led to the formation of a habit of concentration. The energy lost in disconnected, aimless acts was given another direction and made useful and aimful. The concentration and attention time were increased day by day, and the activities were so planned as to rest the child by change—sedentary, then active work—and often one was related to the other, as for instance a quiet work of counting blocks, was followed by walking where steps were counted. Large basal movements, related to the letter forms, were given on large paper or blackboard, and now there is not only ability to imitate and copy form, but the beginning of real initiative is seen. She is asking to draw an oval, a face, etc. These are always large and clear, on the blackboard by preference, and the larger motor centers are thus exercised and brought into coördination before the smaller ones of the hand and fingers are taxed. The child could not hold scissors nor exercise any power over them. After due practice in opening and closing scissors, cutting very narrow strips followed, then wider and wider strips. The cutting preceded cutting to line, which is now started. Number work is associated with all activities and new values and relations are always mastered concretely and immediately the abstract form or number is given and the association made. The progress is slow and has to be so as fatigue sets in very readily here. The movement towards reading is from the familiar Mother Goose story, which is told from pictures and a few words or simple sentences read—then the words are picked out and visualized and sounded. Voice is trained; attention, concentration and interest secured. The wandering attention is caught by writing on the blackboard the names of the pictures of the things she is interested in, as doll, blue, car, etc. From a frightened, cowed, repressed child, subject to almost daily tantrums, in which she let off the energy in incoördinate acts and screams, she is fast becoming a happy child, feeling some power to express herself in normal activities, and making it the easier and sooner to coöperate in work and play with other children.

The general practitioner, and even the pediatrist, is apt to leave these children alone, saying they will outgrow their bad habits. The ablest orthopedists are inclined to give up such cases as hopeless because they cannot win their attention, or get their coöperation and interest. Their exercises are suited to the bright child. Let the little one have the slightest cortical affection due to poliomyelitis, encephalitis, difficult labor at birth, etc., and the ablest physician of the body, unless he be versed in psychometrics, and knows the various mental levels and their possibilities in expression, is apt to be helpless. It is these cases that call for a psychological examination that the training may be adapted to the child's mental level. Getting his willing coöperation in certain activities that may seem like mere play, is starting physical growth along the right lines, developing at the same time the child's intellect, strengthening the will, and saving the disposition by arousing and guiding the emotions.

While all this is vital, where there has been any partial disturbance or affection, it is also very worth while where the motor tracts only have been involved, as in the lighter cases of hemiplegia. I have in mind a very bright child of almost 4 years of age whose slight hemiplegia was noticeable about the small muscles of the mouth, clogging his speech, and making it impossibly for him to blow. He constantly drooled, the prehensile power of one hand was poor, making it almost impossible for him to handle toys, knife or fork, and he frequently fell as he walked, and swayed from side to side as he tried to walk to anyone. This child had been under 2 eminent pediatrists, and was then taken to a neurologist, who, after examination, called me in. Intellectually the boy was above his age, emotionally of a loving and patient disposition, volitionally very strong, being anxious to do as other boys, especially wishing to vie with his older brother about a year and a half his senior. He had a kind, quiet nurse, whose inclination was to do every thing for him—all the boy tried to do was so poorly done—it was much easier to do it herself. She did it to his detriment.

Activities were planned that appealed to the boy and quickly won his coöperation. It is impossible to name all these activities but a few will be given to show their nature and scope. To exercise the little muscles around the mouth, a pretty candle was put on his supper table and when the meal was over he blew it out. Twelve vigorous blows and much saliva failed to accomplish this at first, but by daily practice, after 3 weeks, one blow and a dry one, accomplished the feat . There was also a noticeable improvement shown in less drooling and twitching. Plants were put in the long window of the nursery to be watered daily. At first the wabbling, watering pot caused water to be spattered over floor and window sill, but the desire and determined effort, little by little, led to success. Stairs had seldom been tried. At first these were climbed with banister on one side and nurse on the other, later with banister alone and then a step at a time, even free from banister. When the child removed to the country his own garden was planted and tended. Paths, made very narrow, encircled the flower beds, and the watering and care of the garden were done regularly, care always being taken to keep on the narrow walk. Finally, walking all around the garden without a step off the path was accomplished again and again, and this control, learned so naturally and happily, did not fail to react on his daily walks. Climbing a ladder and going down a slide like brother was required though the nurse dreaded the experiment which was perfectly successful. In dressing, eating and bathing, his coöperation, be it ever so awkward, was encouraged. In his bath, where specific gravity is reduced, certain games calling for use of leg and arm were constantly tried. In addition to these were many more activities that exercised the affected muscles so well, because the thought and will were back of all efforts and the emotional set was happy. Massage was also administered. The masseuse engaged had a mental point of view and coöperated with me combining her definite manipulations with games, playing soldier after strengthening muscles of the neck, to prove he could hold his head well, etc. After a year's treatment, interrupted by a couple of months absence at a distant resort, the boy is talking better, there is hardly any drooling, and the slight tension of the muscles of the mouth has almost gone. He uses his hands and arms with greater assurance, and he says himself, he walks now and does not step on his coat in going up gutters, etc. His sunny disposition is preserved and it grows sunnier as he conquers one by one the difficulties his handicaps had thrown in his way.

Through psychometrics one gets the intellectual, emotional, and volitional level of the young patient and adapts the physical exercises to these levels, thus adding to the exercise all the great force such coöperation gives, and so furthering real growth and cure. This is therapy from within as well as from without—therapy that considers the child as a personality. The interest is not centered on a muscle, an eye, etc., but on affected organs as parts of a whole, where coöperation of mind and body leads to unified, normal development. When we realize this, mental as well as physical reactions will be taken into account in the therapy of growing children.

55 East 76th Street.

THE ERUPTION OF THE TEETH AND THE SUBSEQUENT DEVELOPMENT OF THE JAW*

By H. O. Brown, D.D.S.,

Superintendent of Infirmary, Rochester Dental Dispensary, Rochester, New York.

Mr. President, and gentlemen: I deeply appreciate the honor of being asked to come before you with a paper and I doubly appreciate coming with one on the subject which I have to-night, because it is of vital interest at this time. It is also a pleasure because I believe it indicates the commencement of a closer union between medical men and dentists.

My work with the children at the Rochester Dental Dispensary has shown the great need which we, as a profession, have of you, as a profession, and I believe the need of us is becoming more and more plain to you. The day when either profession can say that it has no need of the other is absolutely past. We, as dentists, must and shall call upon you to help us out of our difficulties and we want you to continue more and more to call upon us. Dispensaries of the sort with which I am connected can only succeed when they have the wholehearted support of the medical as well as the dental profession.

I am going to do most of my talking with lantern slides, as I believe I can show my points easier and more clearly than I can tell them to you, since it is the teeth in malposition which plays such a large part in the development of the jaw.

There are of course several factors which hasten or retard the eruption and consequently influence the development of the jaw. As you all know, the deciduous teeth are, when taken as a whole, a mold put there for the purpose of holding the child's jaw in shape to receive the second set. Unless these teeth are interefered with in some way, they will erupt normally, which is with the uppers biting slightly over the lowers, each tooth approximating the other and the whole forming an even curve from central to cuspid and on back to the molar, each side the counterpart of the other.

Probably the greatest factor causing an irregular eruption of these teeth is the enlarged tonsil and adenoid, which forces the child to breathe through the mouth. This, through muscular attachment at the angle of the mouth, causes an abnormal pressure on the side of the arch, thus narrowing the vault and forming the commencement of what is commonly spoken of as a "crow beak" mouth.

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*Read at the 113th annual meeting of the Medical Society of the State of New York, held at Syracuse, May 6, 7 and 8, 1919.

Another factor influencing the deciduous teeth is thumb sucking. Contrary to the usual opinion, the greatest amount of damage from thumb sucking is not upon the upper set but upon the lowers. The pressure of the thumb forces the upper anterior part of the mouth upward and outward, carrying with it the upper anterior teeth and at the same time forces the lower backward and downward, causing a receding of the chin, a flattening of the lower anterior curve and an abnormal spacing between the two sets anteriorly. Pacifiers and rubber nipples also tend to cause the same effect only not so pronounced.

As the child approaches the age of from five to seven years, we note a slight spacing of the teeth under normal conditions of development. This is nature's provision for the larger incoming teeth of the second set. If this spacing does not take place normally the orthodentist should be consulted and the case taken in hand, as at this time it can be handled very easily and quickly by simply stimulating the proper development of the arch providing the necessary room. At this same age, the child secures its first pair of permanent teeth which are usually the lower centrals. If normal spacing has taken place, these erupt properly, but if there is a constriction of the arch, they are obliged to come in turned on themselves because of being larger than the ones whose places they fill. Usually a lack of development in the upper cuspid region is responsible for this. This no doubt sounds strange, but a glance at an articulated set will show why this is so. The upper cuspid biting over the lower will not allow a spacing below if there is none above, since the lip pressure on these teeth is stronger then the tongue pressure. Therefore a constriction of the deciduous set above means an irregularity of the permanents below.

Early extraction plays a very important part in the irregular and premature eruption of the second teeth. Each tooth as it sets normally in the jaw exerts a lateral pressure against the approximating teeth. It is this lateral pressure of one erupting tooth against the other that assists so materially in the development of the jaw. To lose one before its time means that the adjacent teeth are allowed to move forward or backward, as the case may be, thus narrowing the space so much needed by the incoming permanent tooth. This means that the second one will be obliged to come in out of line or turned part way around. It is impossible to give the exact date at which any one tooth may be safely extracted, as each case varies in this respect. The people whose natural habitat is in the warmer climates, such as the Italians, lose their first teeth much sooner than those inhabiting the colder climates. I have seen Italian children with all permanent bicuspids at the age of 7, where it is unusual to see this in an American child before 12. This of course is unusual, but 2 years difference is very common. We seldom extract a first premolar before 9 years and the second before 11, while we try to keep the cuspid in place until forced out by the incoming permanent cuspid, usually at about 12 years.

The great danger in losing the first teeth before these ages lies in the fact that at the average age of 6, the child secures its first permanent molar, commonly spoken of as the 6 year molar. This tooth, as you know, does not displace any deciduous tooth, but comes in behind the first set. The pressure of this incoming tooth will crowd the first teeth forward if there are any vacant spaces due to early extractions. This means that when the bicuspids come through at the ages of from 9 to 12, they are obliged to erupt anteriorly to their normal positions, then the cuspid, which is the last permanent tooth to erupt, has no place within the arch and therefore erupts labially, forming the so-called "tush." It is not an uncommon sight to find the first bicuspid approximating perfectly with the lateral incisor and the cuspid forced completely out of the arch. In this case there has been no lateral pressure of one tooth against the other, which is so necessary in the development of the jaw.

Occasionally it becomes necessary to extract a deciduous tooth before its time, as in the case of the badly broken down and infected tooth. Ordinarily a simple abscess on the first tooth does not indicate extraction, as these respond very readily to treatment and can usually be saved, if the dentist will give them proper attention. Unfortunately a good many parents cannot be made to see the great harm they are doing when they insist upon extracting, the usual plea being that since it is only a first tooth and another is coming in, there can be no great harm done by its extraction. Often the busy dentist is glad to rid himself of a troublesome patient so easily and the tooth is extracted, with no one giving a thought to the serious after effects. If, however, a tooth refuses to answer to treatment after a reasonable trial, it should be extracted rather than be allowed to remain and necrose the alveolus, as it is much better to have a sound irregular set than an even chalky one caused by the permanent teeth erupting through an area of necrotic tissue. If it has become necessary to extract a tooth before its time, an orthodontic appliance should be placed on the adjacent teeth which will preserve the space until the second tooth has had time to erupt. Let us say, for example, that the second premolar is lost at from 5 to 9 years. The 6 year molar drifts forward on account of the lateral pressure from behind of the incoming 12 year molar, sometimes drifting forward one-half its width. The first bicuspid erupts normally at 9 years, leaving only about half the space necessary for the second bicuspid due at 12. This tooth then either erupts out of line or becomes impacted. If the former, it either comes in lingually and interferes with the movement of the tongue or buccally, where it projects out into the cheek. If the latter, the pressure from its attempt to come through forcing against the anterior root of the molar will always cause pain, and occasionally go so far as to kill the molar, forming an abscess. It is not uncommon to radiograph such cases and find a distinct rarified area around the point of contact, even if it does not kill the tooth outright.

Premature extraction is not by any means the only cause of irregular second teeth, as too long retention of these deciduous teeth will cause as much trouble as their too hasty removal. Let us take for example the two upper anteriors. Occasionally we find permanent teeth commencing to erupt either labially or palatally to the first centrals, in which case the deciduous teeth should be extracted before the permanent ones have a chance to come in too far out of line. Occasionally it is the premolars that are retained beyond their normal time, in which case, we usually find the bicuspids impacted, they being held tightly in the grasp of the premolar roots. Occasionally we see these teeth erupting labially to their normal position, and are apt to consider it the result of too long retention of the premolars, but it is usually due to a lack of room in this region, brought on by imperfect spacing.

These premolars should be extracted and the bicuspids, in their attempt to erupt, will usually provide for themselves the necessary room.

Sometimes, we find perfectly sound premolars in place with no sign of the bicuspids. In these cases it is very unwise to assume that because it is time they were lost that they should be extracted, for often the bicuspid has failed to form, in which case a deciduous extraction means a permanent space. In these cases, the deciduous teeth are usually as sound and hard as the permanent set. It is not only the bicuspids that fail to form, but also the laterals, lower centrals and cuspids. I do not wish to go on record as saying that the upper centrals never fail to form, but I never yet have seen a case with these lacking, while I have seen cases lacking every other tooth. Premature extraction carries another danger with it. The follicle of the second tooth is formed within the grasp of the deciduous roots—to extract this tooth before absorption of these roots takes place often means that the follicle of the second is removed with it, which of course means a permanent space, allowing the rest of the permanent set to drift toward each other, eliminating the lateral force and throwing the chewing planes out of lines until instead of having grinding surfaces between the molars, we only have 1 or 2 cusp tips in contact with the opposing teeth. This means insufficient masticating surfaces and consequently improper mastication, the result of which you know as well as I. As these teeth approach each other, the bell-like formation of their crowns form large wedge shaped inter-proximal spaces which are always catching and retaining meat and other food particles, and forming ideal places for deposits of calculus around the teeth. These spaces, together with the malocclusion thus formed, are the main exciting causes of the pyorrhea, which is almost always sure to show eventually in mouths of this kind, and is so hard to combat, owing to the natural lodging places afforded by this irregularity. The old adage that "a clean tooth never decays" does not apply here, for these teeth are almost impossible to keep clean.

Thus we see that proper attention must be given the first teeth if we are to have the eruption of the second ones take place normally, which can only happen when the jaw has been developed fully by the retention of the deciduous teeth until their proper time for extraction. This forces the second teeth to fight or crowd their way into place, exerting that necessary lateral pressure against each other which aids so materially in the development of the jaw.

Migration of a Round Worm Into the Ear (Rev. de Laryngolie d'Otogie et de Rhinologie, p. 358.) H. Coussieu reports the case of a girl, aged 4 years, brought to him for pain in the right ear, which began suddenly 8 hours previously. In spite of popular topical remedies she never ceased to cry and the pain seemed to be paroxysmal. He suspected otitis media, but was surprised by the results of the local examination. The tympanic membrane was certainly red and bulging, but the latter was limited to the posterior half, there was no pain in the mastoid region or fever. Examination of the nose and pharynx was negative. Instillations of hot carbolized glycerine and hot compresses were prescribed, with instruction to bring the child on the following day if these means did not bring relief. Twenty-four hours later the child was brought again. She had suffered much since the previous day. The membrane was redder and more bulging. Under local anesthesia paracentesis was performed, and the writer was surprised not to obtain pus. Hoping the pain would subside after the paracentesis he left the child in charge of a colleague who was summoned on the following day. The pains became worse and worse, and during the night there was an attack of syncope, crises of nystagmus, and general convulsions. The meatus was blocked by a vermicular body, like that produced by pressure on a tube of pomade. The body was seized with a forceps and a living male ascaris, 15 cm. long, brought away. The child then slept for the greater part of the day. The tympanic incision quickly healed and recovery was complete. No history could be obtained of the passing of worms.

The writer thinks that the pain began when the worm entered the Eusthachian tube. On the first examination, 8 hours later, it had entered the tympanum and produced bulging of the membrane. It finally escaped by the incision.—*Medical Review.*

FIFTY-ONE CASES OF PERTUSSIS TREATED WITH VACCINES

By Harry S. Reynolds, M.D.

New Haven

The following report embodies a combination of two series of cases. In the summer of 1917, at the Babies' Hospital Dispensary, New York City, a considerable number of pertussis cases were treated with the unmixed vaccine produced at that time by the New York City Department of Health, 1.c.c. of the vaccine representing 1,000,000,000 of the Bordet-Gengou bacilli. There was then (and still is) a considerable variance of opinion as to the value of the vaccine treatment of pertussis, and inasmuch as it is extremely desirable to add to the sum of our accurate observations, however small the contribution, it seemed worth while to undertake a systematic method of recording the results obtained in these cases. While over a short period of time over 100 different cases were injected, the actual number proving worthy of report simmered down to 30 cases. Some of the cases did not follow up the prescribed course of treatment, others moved away and were lost sight of in the follow up work, and still others proved of doubtful diagnosis, or were unreliable and unsatisfactory in various ways and had to be rejected.

Under somewhat similar conditions, results were studied in a series of 21 cases at the New Haven Dispensary (Yale) in New Haven, and in private practice, during the spring, summer and fall of 1918, a combined vaccine being used, of formulae to be designated as Formula A and Formula B, and described as follows:

Formula A.—A combined vaccine, 1.c.c. representing 1,800,000,000 bacteria of the formula; bacterium pertussis, 1,000,000,000; streptococcus pyogenes, 100,000,000; staphylococcus pyogenes aureus, 500,000,000; micrococcus catarrhalis, 40,000,000; bacterium influenzae (Pfeiffer) 160,000,000.

Formula B.—A combined vaccine, 1.c.c. representing 3,000,000,000 bacteria of the formula; bacterium pertussis, 2,000,000,000; streptococci, 200,000,000; staphylococci (albus and aureus mixed) 400,000,000; bacterium influenzae 200,000,000; pneumococci (types unknown) 200,000,000.

In analyzing results the attempt was made to study primarily the influence of treatment on the total duration of the cough. During the course of treatment, progress notes were made with reference to influence upon number of paroxysms, whoops, vomiting attacks and influence upon severity, but for the sake of economy of space the results are not here recorded.

The vaccine injections were given subcutaneously in the buttocks or the arm. No unfavorable reactions occurred. Many of the cases in the series treated with combined vaccines received symptomatic treatment for the relief of paroxysms and vomiting, but it is assumed that this fact does not influence our interpretation of the value of vaccine treatment in respect to the total duration of cough.

Series of 30 cases receiving unmixed Bordet-Gengou vaccine: Average duration of the 30 cases, 65 2/5 days. Average total dosage of the 30 cases, 16.9 c.c.

Number of cases:	Injected during:	Average duration:	Average dosage:
11	1st week	45 6/11 days	19.54 c.c
8	2nd week	73 days	15.625 c.c.
8	3rd week	71½ days	16.375 c.c.
2	4th week	83 days	12.75 c.c.
1	6th week	141 days	43.50 c.c.

Series of 21 cases receiving formulae A and B (17 cases received formula A, 2 cases received A and B, and 2 cases received B): Average duration of the 21 cases, 47¾ days. Average total dosage of the 21 cases, 7.26 c.c. (There was no distinction made in dosage of formulae A and B, although B was a much stronger formula—and the results averaged about the same for both formulae).

Number of cases:	Injected during:	Average duration:	Average dosage:
2	1st week	27 days	4.25 c.c.
11	2nd week	46 5/11 days	8.77 c.c.
5	3rd week	52 1/5 days	6.60 c.c.
2	4th week	56½ days	4. c.c.
1	6th week	58 days	6.5 c.c.

The 21 cases treated with the mixed vaccines seem to have fared better, on the whole, than the 30 cases treated with the unmixed Bordet-Gengou vaccine as regards average duration, and when we view all of the cases from the standpoint of inauguration of treatment, those started early in the disease give obviously better results than those started later.

CONCLUSION:

The impression derived from this very small number of cases is that, provided we have a sufficiently early diagnosis, and treatment is started early enough, there is *some* virtue to be derived from the unmixed Bordet-Gengou vaccine, and *more* virtue to be derived from the mixed vaccines administered therapeutically in pertussis.

195 Church Street.

VINCENT'S ANGINA (Jour. A. M. A., Sept. 7, 1918). Taking as a test a case of so-called Vincent's angina, L. F. Barker and S. R. Miller, Baltimore, give a rather exhaustive description and discussion of the disease and its symptoms, cure and treatment. While it is a comparatively harmless and manageable affection if properly recognized and treated, it may assume a more virulent form, which has terminated fatally. It is caused by a fusiform bacillus associated with a spirochete somewhat thicker than the *spirochæta pallida.* The essential points in the diagnosis are the usual disproportion between the appearance of the lesions and the constitutional symptoms, in this respect being very different from diphtheria. It might be confused with syphilis or tonsillitis. When the Wassermann reaction is positive a double infection exists. The treatment consists in good oral hygiene and local applications of various kinds. The best drug to apply is arsphenamin, especially in the severer cases. A single intravenous injection has caused rapid healing, or local applications of the same, in glycerin or in solution, two or three times daily, have had equally striking results. General measures should include strict isolation, a high caloric diet in liquid or semi-solid form, sodium cacodylate injections daily, and such symptomatic measures as seem required.—*Journal A. M. A.*

MISCELLANIES

"ENCEPHALITIS LETHARGICA."*

Since February, 1918, a disease has been somewhat prevalent in England and Wales which has been described under the names of encephalitis lethargica, lethargic encephalitis, epidemic encephalitis. The condition has recently been made notifiable under the name encephalitis lethargica, a term which seems to have been first applied by von Economo (Wien. kiln. Wchnsch. 30:581, 1917.) Similar cases have also been described in France by Netter. In England during the past year, there have been about 107 cases in London and 121 in the provinces. The cases occurred mostly in March, April and May.

In the early cases, the clinical syndrome was described as having 3 cardinal signs: lethargy, asthenia and cranial nerve palsies. Later, other types were described, one resembling Parkinson's disease, with a mask-like expression, rigid limbs, and tremor, and another with evidences of lesions of the cerebral cortex—Jacksonian movements and paralysis. MacNalty divided the cases into three types: 1. A type displaying general disturbance of the central nervous system, without localizing signs. 2. Types with nervous localizing signs, (a) third pair of cranial nerves, (b) brain stem and bulb with local lesions of other cranial nerves, (c) long tracts, (d) ataxic types, (e) cerebral cortex, (f) spinal cord, (g) polyneuritic type. 3. Mild or abortive types.

A prodromal period of 1 to 7 days is described, characterized by lethargy, headache, giddiness, diplopia, lassitude, fatigue, vomiting and diarrhea. The acute stage includes fever, marked asthenia, catalepsy, stupor, occasionally delirium, emotional changes, changes in speech, fibrillary and clonic movements of face, trunk and limbs, marked constipation, paralyses, especially facial or ocular. Death, in some cases, appeared to be due to paralysis of the respiratory centre in the medulla.

After-effects according to MacNalty were: (1) alteration in mental condition, (2) persistence of cranial nerve palsies, (3) the subsequent appearance of paralyses, apparently of spinal origin, and (4) athetonia. It is noted, in another place, that the paralyses of the cranial nerves usually clear up in 2 months.

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*By Josephine B. Neal, M.D., Chief, Meningitis Division, Bureau of Laboratories. From the Monthly Bulletin of the Department of Health, City of New York, March, 1919.

Pathological changes in the brain are described as showing four kinds of lesions: 1. Infiltration of the adventitia of the small vessels with lymphocytes and plasma cells. 2. Foci of interstitial inflammation. 3. Lesions of the nerve cells, not like those found in infantile paralysis. 4. Hemorrhagic foci around the walls of the small vessels.

The laboratory findings were as follows: 1. The blood counts were usually normal, both as regards the number and distribution of the white cells. Blood cultures were sterile.. 2. The spinal fluid showed, in some cases, a slight increase in cells—lymphocytes— and in the protein content. In some instances, there were organisms, but it would seem from the other findings in the spinal fluids that they were probably contaminations. 3. Inoculations with emulsified material from the brain and cord of fatal cases failed to produce symptoms of poliomyelitis in monkeys. This helped to prove that this disease is a clinical entity, distant from poliomyelitis.

Since the middle of October my attention has been attracted by a type of case that I have not seen previously in my work in meningitis and which has some resemblance to the condition described as lethargic encephalitis.

These cases have developed for the most part during convalescence from an attack clinically influenza. About 25 have been under observation. They have ranged in age from 12 weeks to past middle age. Most cases have shown the lethargy and asthenia described by the English, but in only 4 or 5 cases have cranial nerve paralyses been present. One case showed great weakness of the muscles of the feet. The patellar reflexes have often been absent—in 2 or 3 cases they were unequal. The bowels have been constipated, as a rule. Headache has been present in most cases old enough to be questioned. Fever has been present in practically all instances. In 2 fatal cases, I have observed, it has remained high to the end. At this point, it may be stated that most cases have made a good recovery, but some cases are still under observation. One case shows the picture of Parkinson's disease very clearly. The child lies in bed with a perfectly expressionless face, but for the past day or two he has been opening his eyes. He does not speak. The limbs are rigid, there is some tremor. He has to be fed by gavage. His temperature has returned to normal, however, and he shows some improvement. Another case developed tremor, rigidity, and a marked arrhythmia of the pulse and respiration, suggesting a lesion of the cardiac and respiratory centre. This case died, but an autopsy could not be obtained. A third case was admitted to Willard Parker with a diagnosis of acute meningitis. He was delirious, had rigidity of the limbs and very marked tremor, did not speak, but could be induced to swallow. This case resulted fatally, and an autopsy was obtained. The brain showed marked congestion, as did other organs. The report of microscopic examination of the brain has not yet been received.

The spinal fluids have been clear—except in the case of the boy with symptoms of Parkinson's disease where it has been slightly blood tinged. They have shown an increase in the content of mononuclear cells from slight to well marked, and a varying increase in the albumin and globulin. The reduction of Fehling's has been normal. There have been no organisms by smear or culture. On a large part of the fluids, the Wassermann reaction has been performed and it has been consistently negative. Such a spinal fluid would suggest poliomyelitis or a specific involvement of the central nervous system. If some of these mild cases were occurring in the midst of an epidemic of poliomyelitis, they would be diagnosed as the encephalitic type of poliomyelitis, but in the absence of the more usual spinal type of poliomyelitis, it does not seem justifiable to make such a diagnosis. Such spinal fluids are quite different from those I have been accustomed to see in the meningism occurring with pneumonia and other diseases, where the fluid, though increased in amount, is, with rare exceptions, normal in character, showing no increase in the cells or proteid contents. As these cases have occurred in connection with the epidemic of influenza and have, in so many cases, followed attacks clinically influenza, the possibility has occurred to me that they be an encephalitis due to the agent causing the influenza epidemic. Certain English observers have hazarded the conjecture that there is a connection between the epidemics of influenza and of lethargic encephalitis.

The spinal fluid changes that I have observed have been much greater than those recorded by the English in their cases of lethargic encephalitis. But they have not done lumbar punctures in all of their cases, and they do not state at what stage the puncture was made. In 2 or 3 of our cases, where the punctures were done late, as the condition was clearing up, the changes were much less than in the earlier cases. Of course, different workers report findings differently. Another point of difference is that these cases are occurring in the fall and winter, while in England the cases were mainly in the spring. The cases have been widely scattered and there seems to be no evidence that the disease is contagious.

MULTIPLE CUTANEOUS STAPHYLOCOCCAL ABSCESSES IN INFANCY.*

Mutiple cutaneous abscesses are common in infancy, particularly among the poor. These abscesses may occur in hundreds on the same patient, and their size varies from that of a pea to that of a nut. Their onset is gradual, and they run a protracted course, new crops appearing as their predecessors heal. The staphylococcus aureus is almost invariably responsible for these outbreaks. Among the writer's 133 cases it was found in pure culture in 132, and in combination with the streptococcus pyogenes in one.

It has not hitherto been clear whether this condition is mainly due to the faulty resistance of the patient or to the virulence of the infection. Were the former the case, many different strains of staphylococci would probably be capable of provoking these abscesses. But if their development depended on the virulence of one particular strain, then this strain would, in any given case, be found in every abscess. To elucidate this point the writer has investigated 10 severe and 10 slight cases, and has isolated the staphylococci found in abscesses in different parts of the body of each patient. He found that every patient was infected by only one strain of staphylococcus, the cocci obtained from the different abscesses in each case conforming to the same type and reacting in the same way to different tests.

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*C. Nyberg (Finska Läkaresällskapets Handlingar, November and December, 1918, p. 1082).

The disease can be conveyed from one infant to another without direct contact, and even under the hygienic conditions of a hospital spread of the infection is not rare. The writer records several cases to prove this. The source of the infection is often the patient's own intestinal flora, for the abscesses frequently begin in the region of the buttocks spreading thence to the thighs, and developing only at a later stage in more distant parts of the body. The staphylococcus aureus does not, indeed, belong to the normal intestinal flora, but it is not infrequently present in the feces of weakly children. Among 79 patients not suffering from staphylococcal abscesses, the writer found the staphylococcus aureus in feces of 38 per cent., and among 58 patients suffering from multiple staphylococcus aureus abscesses, he found this organism in the feces of 69 per cent. He also found that the frequency with which this organism could be detected in the feces was directly proportional to the number of abscesses on the body. No doubt in many cases the infant sucks its infected fingers and swallows the organisms which reach the feces in this manner. But when the cutaneous abscesses are preceded by a staphylococcus aureus enteritis, as in one of the writer's cases, the enteritis is obviously the source of, not the sequel to, the infection of the skin. In some of the writer's cases the staphylococcus aureus isolated from the feces conformed to the type isolated from abscesses in the patient's skin; in other cases the 2 types were definitely distinct, showing that even when resistance to the cutaneous infection is inadequate, the patient can harbor another strain of staphylococcus in his alimentary canal with impunity. There is little evidence to support the view that the cutaneous abscesses arise by the blood stream from a focus of infection in the body; the staphylococcus aureus is quickly destroyed in the blood even when, shortly before death, a mixed crowd of saprophytic organisms from the intestinal tract circulate in the blood.

The incidence of the disease in Finland is shown by the following figures. During 3 years there were 128 cases at the writer's hospital where about 800 infants up to the age of 2 years are treated yearly in the in-and-out-patients departments. Thus 5.3 per cent. of all these infants suffered from this disease. There are 2 types of infant particularly susceptible to this infection: the fat, overfed infant with an exudative diathesis, and the marasmic infant, debilitated by prolonged disease, notably intestinal disease. These marasmic patients also often exhibit the exudative diathesis. The disease is far more common among artificially than among breast-fed infants—a fact correlated, no doubt, with the comparative frequency of intestinal disturbances among artificially fed infants. That faulty powers of resistance play an important rôle apart from the virulence of the infection is shown by the fact that in a hospital ward where the infection is spreading, 2 to 3 infants may suffer from the disease in a severe form while others remain immune or develop only a few abscesses which heal quickly. These abscesses are similar in many respects to the furunculosis of adults, and the difference in appearance is due to the fact that the subcutaneous tissues in an infant are more loose and elastic than in an adult. The symptoms may be grouped according as the patient belongs to one or other of 2 distinct types:

1. The patient is fat and pasty, and of an exudative diathesis. The skin has long been unhealthy and subject to attacks of intertrigo, seborrhea or eczema. The onset of the staphylococcal abscesses is insidious, and the first to be noted is often on the back of the neck or on the scalp. Before this abscess has healed several others have cropped up in its neighborhood. In some cases the disease ceases with the healing of the first few abscesses, in others it lasts over a year. An initial eruption of numerous minute vesicles or pustules is often overlooked although it takes long to disappear. Sometimes this miliary-like eruption is not confined to its original site, but spreads over wide areas, and after a few days the vesicles become encrusted, and here and there give rise to abscesses which henceforth dominate the clinical picture. These abscesses begin as insignificant red prominences with a diameter of only 1cm. In a day or two a cyanosed tinge comes over the prominence, the skin becomes glistening, and fluctuation is demonstrable. Owing to the great elasticity of the skin and subcutaneous tissues, even large abscesses may develop without bulging much outwards. They are tender at first: later they are comparatively painless. The brawny infiltration and the central pitting so conspicuous in the furunculosis of adults are lacking. Left to themselves, these abscesses may remain unbroken for days, but they burst sooner or later yielding thick, greyish-red, blood-stained pus. Sometimes, before bursting,

several abscesses fuse, forming cavities, of the size of a grape or even an egg, filled with pus. When these large abscesses burst, they often provide a breeding ground for streptococci and other secondary infections; the surrounding skin becomes undermined, fistulæ form, and severe pyodermia develops. The temperature is slightly raised while the abscesses are growing, but when the pustular stage is reached, the temperature falls to normal.

2. The patient is marasmic, and suffers from some other severe constitutional disease. The onset of the infection is more acute, the abscesses are more numerous, and they run a more severe course. On the other hand, if the constitutional disturbances are cured, the abscesses may vanish sooner than in the more benign form. In this second class the abscesses usually begin near the anus, when they spread to the rest of the body, being particularly numerous on the back. They are more prominent and their development is more rapid than in the first class, as many as 10 abscesses maturing daily. Co-existing with these abscesses there is often on arms and legs another quite distinct eruption of greyish-yellow pustules, each one no larger than a lentil, on a slightly infiltrated red ground. In a few cases this eruption exists alone, but in most one or two abscesses, typical of staphylococcus aureus infection of the skin, are found among the small pustules, betraying the polymorphous character of the infecting organism. Another, comparatively rare, manifestation of the same organism is a pemphigus-like eruption. Each swelling may be as large as a pea, a bean, or even larger; and beginning as a tense, greyish brown, almost clear vesicle, it quickly becomes flaccid and its contents turbid. After the breaking of the skin over the swelling, a thin, dry crust forms on its site. Scattered among the abscesses there are seldom more than 2 or 3 such pemphigus-like vesicles, which appear early in the disease and are usually found on the abdomen. Occasionally this pemphigus-like eruption is the forerunner of the abscesses.

Complications are not common. In 3 cases the writer found the cutaneous abscesses accompanied by suppuration of the lymphatic glands. The infection of the glands was streptococcal, not staphylococcal, so foci other than the cutaneous abscesses must have infected the glands. Two of these 3 patients suffered from suppuration of the middle ear as well as from abscesses of the cervical glands. The secondary streptococcal infection of the abscesses may lead to extensive necrosis, and to erysipelas sometimes. But, strangely enough, there is no record of phlebitis, osteomyelitis, or pyemia as a sequel to staphylococcal abscesses of the skin. Their diagnosis is easy: the "cold" tuberculous abscess does not resemble them closely, and a bacteriological examinaton of the pus in doubtful cases should settle the diagnosis. The rare, metastatic, subcutaneous abscesses of pyemia are accompanied by other clinical manifestations distinctive enough for the differential diagnosis. The staphylococcal abscesses are seldom fatal by themselves.

Treatment consists of restoring the general health, incising abscesses as soon as fluctuation is demonstrable, and drainage. Antiseptic precautions against spread of the infection must be taken, but only in exceptional cases will vaccine therapy, the value of which is not yet proven, be indicated. Failing to cure the condition by these means, one of the following methods may be tried, but for their efficacy the writer is not prepared to vouch: cauterisation of the abscess before the stage of fluctuation; painting iodine and ichthyol over the inflamed area, which is then covered by leukoplast. Painting a ring of collodion round the inflamed spot, and reinforcing this ring by a new layer of collodion every day. Then, as the tissues within the ring become infiltrated, it exerts a certain degree of pressure on, and produces stasis within the enclosed area. Wassermann and Ledermann apply a watery extract of staphylococci in gelatine or lanolin ointment to the inflamed area, with a view to stimulating a local, immunizing reaction. The results are said to be excellent.

The antispetic precautions to be taken against spread of infection from one area to another in the same patient consist of daily baths in a 1 in 10,000 solution of perchloride of mercury, or in a 1 in 4000 to 1 in 6000 solution of potassium permanganate. If baths cannot be given daily, then daily sponging with antiseptic lotions. It is particularly necessary to give antiseptic baths after abscesses have been opened and the neighboring skin has been soiled. Lewandoffsky, on the assumption that the abscesses exclusively arise in connection with the sweat glands, recommends sudorifics before the antiseptic bath.—*The Medical Review,* March, 1919.

THE SCHICK REACTION AND ITS PRACTICAL APPLICATIONS*

The results of combined clinical and laboratory experience, in testing the blood for antitoxin in cases of diphtheria and in persons in contact with diphtheria, have shown that only those individuals contract diphtheria who have no antitoxin or only a minute amount in their blood and tissues. The methods previously in use for estimating antitoxin, and thus separating the susceptible from the non-susceptible individuals, have been too troublesome and time consuming to be of practical value in routine cases. Schick, in 1913, published a description of a simple clinical test by which this can be accurately accomplished. The reaction depends on the local irritant action of minute quantities of diphtheria toxin when injected intracutaneously. If antitoxin is absent, or present only in very small amounts, insufficient for protection from diphtheria, a positive reaction will appear in from 24 to 48 hours.

The Positive Reaction.—A positive reaction is characterized by a circumscribed area of redness and slight infiltration which measures from 1 to 2 centimeters in diameter. It persists for 7 to 14 days, and on fading, shows, as a rule, superficial scaling and a persistent brownish pigmentation. The amount of toxin injected, as advised by Schick, is 1/50 M.L.D. (minimum lethal dose) for the guinea pig, in 0.1 c.c. of normal saline. We prefer 1/50 M.L.D. in 0.2 c.c. It is desirable to give exactly 0.2 c.c. but even such variations as 0.1 c.c. and 0.3 c.c. give fairly consistent results—the area of redness being smaller when 0.1 c.c. is given and larger when 0.3 c.c. It is necessary to give it intracutaneously so that the toxin will remain in the dense tissue and have time to exert its irritant action. The slightly raised white area, at the point of injection, is infallible evidence of the delivery intracutaneously of the diluted toxin.

The Pseudo-Reaction.—Schick soon noticed that, in the older children and adults, a considerable percentage showed a protein reaction which had nothing to do with the toxin. In these cases, even when the mixture was over neutralized with antitoxin, this same pseudo-reaction developed. In most cases, this reaction came on more promptly, covered a larger surface, was more of the urticarial type, and disappeared within 3 days. Pigmentation is absent or slight, and superficial scaling is very rare. In a small percentage, however, the reaction persisted and it was very difficult to decide a true and a pseudo-reaction. When there was a combined reaction it was harder to decide how much was due to the toxin and how much to the non-toxic protein, because the development of a true reaction in no way prevented the protein reaction.

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*By Wm. H. Park, M.D., Director, Bureau of Laboratories. From the Monthly Bulletin of the Department of Health, City of New York, March, 1919.

The best practice. therefore, in adults is to inject the toxin in the skin of one arm, and the heated or antitoxin neutralized toxin in the other arm. In this way the amount of protein reaction can be noted, and it can be decided whether the reaction following the toxin is a simple, true reaction, a pseudo-reaction, or a combined reaction. Even after the eye has been thoroughly trained, it is still wise to use the two injections when possible. On other occasions, when only one injection is made, any cases which remain in doubt are re-tested or considered as true reactions.

I think it is apparent to all that the technique of the Schick reaction, although very simple, must be carried out with the greatest accuracy, or the results will be entirely misleading. If the toxin has been diluted and stored, it may readily deteriorate and, instead of giving 0.02 of a fatal dose (M.L.D.) only one-half that amount may be injected, and no toxic reaction will occur, and the misleading idea is given that the person has been shown to be immune. If the toxin is carelessly diluted and a large surplus of toxin is given, slight necrosis may develop at the point of injection. On two occasions when the test was extensively employed, elsewhere in New York state, this accident occurred and some hundreds of people developed very sore arms. The neutralized or heated toxin, used for the pseudo-reaction, must be prepared with equal care.

To carry out the test, it is essential to have an accurate syringe, with a sharp, but short-pointed, fine needle. Most persons prefer a needle with a length of one-half inch. The usual 1 c.c. "Record" tuberculin syringe, with a fine platinum- iridium needle, answers the purpose well. A standard diphtheria toxin contained in capillary tubes in such amount that the contents of one tube added to 10 c.c. of water gives the required dilution. The dilution will keep in the ice-box with little deterioration for at least one day. When bulk toxin alone is at hand, further dilutions are made in normal saline, of such strength that 0.1 or 0.2 c.c. contains 1/50 M.L.D. for the guinea pig. As already stated, Schick prefers a bulk dose of 0.1 c.c., while we prefer 0.2 c.c. This amount is injected, intracutaneously, on the flexor surface of the arm or forearm. The persistent pigmentation which often results may make selection of the forearm objectionable.

Though the intensity of the reaction varies in different individuals, a well-marked redness indicates an almost complete absence of antitoxin in the individual tested. Faint reactions point to the presence of very small amounts of antitoxin, which are not sufficient, however to certainly protect the individual against diphtheria, but would protect from systemic intoxication. To prevent the appearance of the reaction, according to Schick, the presence in an individual of at least 1/30 unit of antitoxin per c.c. of blood is required. This amount he considers sufficient to protect against diphtheria. According to v. Behring, even as little as 1/100 unit of antitoxin will protect against the disease in uncomplicated cases. In a child 3 years of age, weighing 35 pounds, we found that 10 units of antitoxin were sufficient to prevent the appearance of the Schick test when made 24 hours after the injection of antitoxin.

The Practical Value of the Schick Reaction.—The Schick reaction has been carried out, during the past 5 years, on all patients entering the scarlet fever pavilion of the Willard Parker Hospital. Only cases giving positive reactions were immunized against diphtheria; those giving a negative reaction received no immunization, but were carefully observed. Although many of the negatively reacting patients became carriers of virulent diphtheria bacilli during their stay in the wards, no cases of clinical diphtheria developed among them. The patients who gave positive reactions received, in practically all cases, injections of diphtheria antitoxin.

The percentage of individuals susceptible to diphtheria is shown by the Schick test to be greatest between the ages of 1 and 4 years. It is less during the second six months of life, and less in older children, and least in adults and infants under six months. In adults, the positive reactions were not more than 12 per cent.

Susceptibility of Various Ages to Diphtheria.
(As Indicated by Diphtheria-toxin Skin Test.)

Age.	Susceptible.
Under 3 months	15 per cent.
3 to 6 months	30 per cent.
6 months to 1 year	60 per cent.
1 to 2 years	70 per cent.
2 to 3 years	60 per cent.
3 to 5 years	40 per cent.
5 to 10 years	30 per cent.
10 to 20 years	20 per cent.
Over 20 years	12 per cent.

During systematic testing of groups of children belonging to families, we have been impressed with the frequency with which all the children of the same family gave a similar reaction. If variations were found, the younger children, with the exception of the baby, always gave the positive reactions. If the youngest child had a negative reaction, all the older children were also negative. On the other hand, if the oldest child in a family gave a positive reaction, the younger children always showed positive reactions.

Permanence of Negative Reaction in Persons Developing Natural Immunity.—The value of the Schick reaction as a practical guide in judging the immunity of persons depends on the duration of this condition. If natural immunity, developed in children, lasted only a few days or months, the only value of the Schick test would be in the immediate emergency of an outbreak of diphtheria, when sufficient time was available to make the test in order to inject antitoxin only in those who showed a positive reaction. If, however, a child developing natural immunity holds that immunity for life, the knowledge that it gives a negative Schick reaction is of value, not only for the present, but for the rest of the individual's lifetime. For the past 5 years, we have been testing and re-testing thousands of children and keeping records. We found that, with very few exceptions, those who gave a negative Schick test continued to show immunity during the 5 years. From this and the fact of the age distribution of immune children in families, in which the younger have a positive reaction and the older children and adults a negative reaction, it would seem that when once a child develops natural immunity this is a lifelong possession. It is true that we have found, during the five-year period mentioned, in about 2 per cent. of the cases, that children noted to have had a negative Schick reaction, have at some time shown a positive reaction. It is my belief that these supposed changes in reaction are not actual but are due to improper technique in making the intracutaneous test or in the reading of the reaction. More careful observations in the future will show whether this opinion is correct or not. Where the same observer made the tests, there were practically no changes from negative to positive reaction.

A matter of much practical importance is whether a person with sufficient antitoxin to give a negative reaction, has sufficient to prevent the development of diphtheria. We have been so in the habit of considering that a positive culture on Loeffler's blood serum indicated that the case had diphtheria, that we have lost sight of the true fact, which is, that such a culture simply indicates that the case is a carrier. By tests we know that many of the bacilli found are absolutely non-virulent. It is an undoubted fact that a person who is a carrier of virulent or non-virulent diphtheria bacilli may be afflicted with a septic tonsillitis, due to the streptococci or other microorganisms. When a case of doubtful diphtheria has a negative Schick test and a positive culture, it is extremely difficult to decide how to consider the case. From the practical standpoint, antitoxin should be given because there is always a possibility that there has been some error in the technique of the test, or in its reading or some mistake as to the identity of the individual. From the scientific viewpoint, the matter is of special interest. During the 5 years we have used the Schick test, no cases of severe diphtheria have developed in persons known to have had a negative Schick test, while some 8 cases of moderate tonsillar infection with diphtheria bacilli have been observed in such individuals. In all but 2 of these cases, no antitoxin was given, and recovery took place, as in similar cases of doubtful diagnosis, in which no diphtheria bacilli were to be found in the cultures. It seems safe to rely on the belief that a person with a sufficient amount of antitoxin to give a negative Schick test is incapable of developing constitutional toxemia or a severe infection from diphtheria bacilli. There is a doubt as to whether very slight infections of the superficial mucous membrane may occur in such persons. My own opinion is that cases supposed to be of this character are instances of streptococcus infection, the diphtheria bacilli being present as in a carrier. Those that show a faintly positive Schick test are probably liable to moderate local infections. Careful observations of these persons with faint reactions will allow us, in time, to decide whether they require immunization. If this is given, it should be produced by antitoxin for the immediate danger, and by toxin-antitoxin for later and permanent effect. It takes from 5 to 6 weeks to develop active immunity by the use of toxin-antitoxin.

After we have discovered susceptibles through the use of the Schick test, the question of rendering them immune at once arises.

Toxin-antitoxin (partially neutralized diphtheria toxin) used as a vaccine, has proved to be as effective an immunizing agent as typhoid vaccine. Over 4,000 susceptibles (including 1,000 under 1 week old) have been injected with this mixture, without the subsequent occurrence of a single case of diphtheria.

The Value of Toxin-Antitoxin: (1) It is absolutely harmless. No reaction develops in infants, while in older children and adults a moderate swelling of the arm may appear and last for 1 to 3 days. (2) One injection gives immunity to 80 per cent. of those previously susceptible; two injections give immunity to 90 per cent.; and three injections to 97 per cent. (3) Immunity conferred lasts for at least three years, and probably much longer. (4) No diphtheria has occurred in those so far immunized.

DEPARTMENT OF ABSTRACTS

Donnelly, W. H.: The Significance of Glandular Enlargements in Children. (Long Island Medical Journal, February, 1919, p. 4.)

Donnelly states that the bronchial and mesenteric groups are most frequently affected during infancy and up to 3 years of age, while from 3 to 10 years the cervical and other groups, draining the pharynx and tonsils, assume the position of prominence. Lymphatic gland enlargement may be generalized or localized. Under the head of generalized affections are Hodgkin's disease, lymphatic leukemia, secondary syphilis, German measles, Still's disease, status lymphaticus, and general tuberculous adenopathy. Hodgkin's disease is best diagonsed by microscopic examination of the gland and a negative von Pirquet. The glands remain discrete and do not adhere to the skin or deeper tissues as in tuberculosis or lymphosarcoma. The etiology of this disease is uncertain though Dias of Rio de Janeiro thinks it is due to a fungus organism of the blastomycete or yeast class and has renamed the disease "adenomycosis." The yeast bodies are seen in smears from sections of the glands and have been successfully grown. In secondary syphilis the roseola is present, the glandular swelling slight and the Wassermann positive. In German measles the involvement of the occipital group of glands with a measle-like rash and Wassermann help the diagnosis. Still's disease shows a polyarthritis with a general secondary glandular enlargement. It often follows scarlet fever or rheumatism and involves in order of frequency, carpus, phalanges, elbows, ankles, knees, hips and cervical spine. In lymphatic leukemia there is fever present with a marked anemia. The small lymphocytes are enormously increased up to 90-98 per cent. of the total white cells. Status lymphaticus is usually seen in rachitic children. There is a general glandular enlargement ,especially of the thymus. Escherich believes that a pathological condition of the thymus exists which causes a form of acute intoxication with cardiac syncope or paralysis. Sudden death is common in this type especially while under an anesthetic. Generalized tuberculous adenopathy is rare and is diagnosed by histological examination of glands and von Pirquet test.

Of the localized glandular enlargements we have those of the occipital glands, usually the result of pediculosis, and sometimes of impetigo of the scalp or seborrheic dermatitis; the pre-auricular glands due to infection of the skin of the cheek, eyelid, ear, or temporal region of scalp; the submaxillary due to tonsillar inflammations, carious teeth or alveolar abscesses; the cervical glands, the most frequent seat of tuberculous infection in children from 3 to 10 years of age. This infection is usually limited to these glands and very seldom results in generalized tuberculosis. Any simple inflammation between 2 and 10 years, which keeps up beyond 4 or 5 months, should be regarded with suspicion especially with a positive von Pirquet. Mumps is also a frequent localized glandular enlargement usually bilateral and usually involving the parotid, although the salivary glands may be the only ones involved. The bronchial glands are likewise of very great importance as the seat of tuberculosis in children under 7 years of age. D'Espine of Geneva, Switzerland, has described a physical sign for their detection, when diseased, which consists of bronchial breathing or whispering bronchophony, extending from the seventh cervical to the upper dorsal vertebra. X-ray examinations and the von Pirquet tests are a great aid in diagnosis. The mesenteric glands are enlarged as the result of any acute inflammation of the bowel as colitis, dysentery, typhoid or tuberculosis of the bowel or peritoneum. X-ray plates and an external or bimanual examination by means of the rectum will aid in the diagnosis. JAMES H. KERLEY.

JEANS, P. C.: SYPHILIS AND ITS RELATIONS TO INFANT MORTALITY. (The American Journal of Syphilis, January, 1919, p. 114.)

Syphilis assumes a position of maximum importance in infant mortality if the abortions, miscarriages and still births, which are really a waste of potential life, are considered. Vital statistics show that including the above, syphilis easily takes first place among the infections as a cause of death.

From data collected by Jeans, he gives the following figures: About 10 to 20 per cent., of adult males and about 10 per cent. of married women are syphilitic, and a minimum of 10 per cent. of marriages involve a syphilitic individual; 75 per cent. of all the offspring in a syphilitic family are infected; in a syphilitic family 30 per cent. of the pregnancies terminate in death at or before term, a waste 3 times greater than is found in nonsyphilitic families; 30 per cent. of all the living births in a syphilitic family die in infancy as compared with a normal rate of 15 per cent. in the same class; probably 25 to 30 per cent. of clinically syphilitic infants die as a result of syphilis; but 17 per cent, of all the pregnancies in syphilitic families result in living non-syphilitic children who survive the period of infancy; about 5 per cent. of our infant population is syphilitic; according to St. Louis vital statistics 3½ per cent. of all infant deaths are ascribed to lues.

The writer sums up by stating that the proper treatment of infantile syphilis is prophylaxis directed at the father and, next in importance, early and adequate treatment of the syphilitic prospective mother. The shorter the time of treatment prior to birth, the more likely is the child to be syphilitic, but even the shortest periods are of benefit. James H. Kerley.

Pullen, Herbert A.: Preventive Orthodontia in Early Childhood and the Management of Children. (International Journal of Orthodontia and Oral Surgery, April, 1919, p. 166.)

The author states that the beginning of preventive and prophylactic measures in orthodontia, as in every branch of health hygiene, must be directed from earliest infancy. The greatest benefit in orthodontic treatment is obtained in the early years of childhood, when such pathological changes, as arrested development of the maxilla and the nasal structures, are first apparent; also before these conditions are confirmed by several years of mouth breathing and before abnormal development of the internal and external structures of the face here shut the door to the best opportunity for effective treatment. Malpositions of the teeth are the objective symptoms of a deficient development of the dental and maxillary arches, with a resultant crowding and overlapping of the teeth, in the effort to erupt in their confined quarters. The time of corrective treatment has been arranged somewhat by nature at the age of 8 years, the deciduous teeth (cuspids and molars) whose roots enclose the crowns of the permanent canines and biscuspids, are still intact. They furnish a firm support for the appliances which may be adjusted for anterior arch expansion, thus providing by mechanical retention, the space necessary for the eruption of the permanent successors. Such mechanical retention consists of a banding of these deciduous cuspids and molars, and connecting these bands by a soldered retaining wire on the lingual side. In the event of premature loss of a molar in the deciduous arch, it is advisable to guard against subsequent contraction of the dental arch, by holding the space of the last tooth open by means of bands on the teeth on either side of the space connected by the lingual wire. Prolonged retention of the deciduous teeth may likewise cause trouble by their roots being unabsorbed, and directing the crowns of their permanent successors lingually. The prolonged retention of deciduous cuspids, or first or second molars, may be due to absence of the succeeding tooth, so that the extraction of one of these teeth, without an x-ray diagnosis, is not advisable. This deciduous cuspid or molar may do service of a life time in spite of root absorption. Early loss of the first permanent molar due to caries, is a frequent cause of malocclusion, as the teeth on either side of the last molar drift into the space, and the dental arches collapse in the same manner as an arch of masonry collapses when the keystone is removed. In the management of children, it should be the endeavor of the dentist to banish fear at the first visit, and to gain the child's confidence by absence of any rough handling, and avoidance of pain, as far as possible. At the same time he should try to furnish diversion to the child by stories and to find out what the child's interest is occupied in at the time, adding ideas which it is looking for, and stimulating its enthusiasm, thus gaining its confidence. JAMES H. KERLEY.

BENSON, ARTHUR W.: REPORT OF A CASE OF PICA WITH UNIQUE COMPLICATIONS. (New York State Journal of Medicine, May, 1919, p. 185.)

Dr. Benson cites an extreme case of pica brought to his attention by bloody stools. The lead end of an ordinary kitchen knife was the article ingested. The same child, 7 years old, has frequently eaten dirt, pebbles, soap, wooden lead pencils and fruit pits. He appends the following remarks: Pica has been frequently noted among lower animals, especially lambs. It is very common in the insane, among idiots and imbeciles and sometimes is met with in pregnant women and in hysterical and chlorotic girls.

It is, however, with pica of infancy and childhood, which Thomson has separated into two classes, that we are chiefly concerned, though he admits it is not always easy to settle into which of these an individual case belongs. He says: "There are, first those cases in which the habit begins at any age, with marked deterioration of the general health of which anemia is usually a symptom. Patients of this cachectic class may be suffering from a variety of curable and incurable conditions, such as rickets and bronchitis, round worms, anemia, malignant tumor, tuberculosis. Secondly, there are the larger number in whom the morbid craving develops in early infancy, as opportunity for its indulgence offers, passing off gradually in most cases, even if untreated when the child is about three years old." Thomson collected 11 cases, 2 and perhaps 3 of which belong to the first or cachectic class; the other cases fall logically in class "Two."

Still in 1912 outlined the histories of 14 cases and laid considerable stress upon the etiology. He emphasized that in the majority of cases there is associated a "nervous temperament" and digestive disorders. Hutchinson had already noted that pica not unfrequently accompanied a chronic gastro-intestinal catarrh.

Many writers insist that pica is simply the exaggeration of a normal habit among infants who invariably place anything and everything within reach in their mouths. Koplik, in classifying pica under bad habits, says that "it is not necessarily an indication of serious nervous functional disturbances and that it is difficult to say from a purely clinical standpoint, whether such bad habits lead to any serious results." Still says: "I have never seen any serious harm come from this habit." Holt places pica among functional nervous diseases and considers it akin to such injurious habits of infancy and childhood as masturbation, nail biting and head banging.

The most comprehensive outline for treatment has been given by Thomson, who says that medicines are rarely indicated, and that the therapeutic measures are mainly four: (1) Do not allow these children to obtain the substances for which they have a morbid craving. (2) Rectify any digestive disturbances with due attention to diet. (3) Improve the general health. (4) Whenever possible, change the environment, occupying the mind with new experiences, keeping these children busy and happy.

HAROLD R. MIXSELL.

SCHWARZ, HERMAN: THE CARE OF THE PREMATURE CHILD IN THE HOME. (New York State Journal of Medicine, May, 1919, p. 180.)

The author takes up the following points: (1) the temperature of the child; (2) the temperature of the room; (3) the nourishment; (4) the respiration; (5) the weight; (6) nursing care; (7) prognosis.

The temperature of the premature child at birth is lowered and less than that of the full-term child. As is well known there is monothermia in the normal newborn. Variation of less than three-tenths of a degree in the 24 hours is the rule, whereas in the premature, subnormal temperature, with large fluctuations, usually downward, are common. This is due first to the greater body surface as compared to the weight of the child; second, to a greatly diminished or almost absent paniculus adiposis; third, to the diminished amount of food that the premature can take and assimilate, and fourth, to incomplete devolpment of the nervous system, especially of the heat center.

In order to combat these circumstances we try to keep the heat within the child's body by various methods. It should be thoroughly rolled up, head included, and surrounded with hot bottles, or if the mother is in bad shape it may be put in a warm bath (temperature 100°-102°) and held there. A room temperature of 78° to 80° F. is important.

Nourishment can be discussed under the following headings: (1) What to give. (2) How much to give. (3) How often to give. (4) How to give it.

Breast milk is the only food for the premature, especially during the first few weeks of life, and it is the duty of the physician to scour the neighborhood and induce each neighbor to give a few ounces to make up the amount. We have been fortunate in being able always to get a sufficient amount of breast milk from our clinic. The amount of breast milk a premature needs is difficult to state absolutely. The caloric requirements are surely higher than in the full-term child. Men differ, placing it anywhere from 100 to 160 calories pro kilo weight. This is because the body surface is relatively greater than the normal newborn, and, as stated before, the paniculus is less. Yet the difference in the caloric requirement is more apparent than real for no one will deny that a kilo of a nice fatty, juicy, full-term, newborn is an entirely different thing than the kilo of dry skin, muscle and bones of the premature. However, it may safely be said that after the first week one must give at least 8 ounces of breast milk in the 24 hours; usually 10 to 12 ounces in order to make them gain. One-sixth to one-seventh of the body weight in ounces of breast milk is a safe rule, which must be controlled by daily weighing. It is important to begin feeding the premature surely within 12 hours after birth, or at least give them water so that as little physiological loss as possible takes place. Twenty to fifty grams, about one ounce, the first day, increasing by an ounce or more each day so that the quanitity to cover the caloric requirements, or more, practically stated to make them hold their weight or gain, is given as soon as possible.

If breast milk cannot be obtained I use a dilution of whole milk 1 to 4, with milk sugar (a mixture low in fat and high in carbohydrate up to 7 per cent sugar), or more often an evaporated milk mixture, in which one ounce of the evaporated milk is equal to about 2 ounces of ordinary milk. At the end of the first week about 5 to 7 ounces of cow's milk with one ounce of milk sugar in the 24 hours usually covers the caloric requirement. The feedings are generally given by means of the Breck feeder, especially where the child is too weak to suck.

In sizing up the progress in a premature infant it must be remembered that: (1) A child may be full-term yet really not ripe or fully developed. (2) In addition to being premature it may be congenitally weak, with inability to perform the normal function of life. (3) That it may have congental deformities which further impair its chances to live. (4) That the period of rapid development in the last months of uterine life, which these children lose, has to be allowed for by proper and sufficient nourishment. (5) It must be realized that these babies miss the great deposit of mineral salts, especially iron and calcium, which occurs in the last months of pregnancy, and thus regularly become anemic and rachitic.

How often should the premature be fed cannot be answered dogmatically. I tell my nurses how much to give in 24 hours, and the less frequent the feedings, even as great an interval as every 4 hours, the better. However, as much as we have tried to give only 5 to 6 feedings in 24 hours—as seems to have been so successfully done by many of my friends in the West—we have usually failed, and have had to give every 2 or 3 hours, or even every hour. It depends upon the baby's suckling power, its capacity, etc. Here is where the careful nurse or attendant comes in, who soon gets to know the particular infant, how it will take the most without regurgitating, or getting attacks of cyanosis.

The immediate prognosis depends upon: (1) The degree of somnolence—the child's cry, etc. (2) The frequency and duration of the period of cyanotic attacks. (3) The ability to suckle or swallow. (4) The ability to keep the temperature fairly normal. (5) The ability to gain weight.

HAROLD R. MIXSELL.

ABRAMS, ALBERT: MEDICAL TREATMENT OF APPENDICITIS. (Medical Record, March 22, 1919, p. 484.)

Abrams states that spondylotherapy has very beneficial results in the treatment of chronic catarrhal forms of appendicitis. His method consists, of percussion of the tenth dorsal spine. The daily seance should not exceed 3 minutes, and to avoid exhaustion of the reflexes the 3 minutes' seance should occupy only ½ minute of treatment followed by ½ minute of rest. A like procedure is indicated in all the methods of spondylotherapy for eliciting the reflexes. A percussion hammer and pleximeter suffice for executing the method. If an apparatus is employed, one yielding a blow and not vibration is indicated. The author states that in the cord there are centers for the contraction and dilatation of the viscera and that percussion of the tenth dorsal spine empties the appendix of its contents and of the first lumbar spine causes it to refill.

C. A. LANG.

DIPLOPIA AFTER LUMBAR PUNCTURE (Medical Review, April 1919, p. 97). A chemist, aged 30, contracted syphilis, for which he was treated with mercury. Under this treatment Wassermann reaction became negative. Seven years after the infection, he complained of mental symptoms, including depression. Lumbar puncture was, accordingly performed, and about 5 c.c. of normal looking spinal fluid was withdrawn. Wassermann reaction was negative. During the next few days he kept to his bed owing to pain in the neck and back of the head; it became intense as soon as he lifted his head from the pillow. When the patient was again seen, 8 days after the operation, he complained of headache, but not of diplopia. This began 10 days after the operation. Reading and dispensing were not affected, but distant objects were duplicated, and he could enjoy the movements of an actress on the stage only when he covered one eye. Ten days later the diplopia passed off, and nothing abnormal could be detected a month after the operation. Three explanations are possible: (1) the ocurrence of the diplopia 10 days after the lumbar puncture may have been only a coincidence; (2) the lumbar puncture may have stirred to activity a limited sypilitic focus in the central nervous system. The fact that the cerebro-spinal fluid gave a negative Wassermann reaction does not exclude this explanation, which is, however, unconvincing seeing that the diplopia passed off so quickly; (3) the diplopia may have been a direct sequel to the operation. This explanation is more credible as the other explanations are improbable. C. A. LANG.

FISHER, LOUIS: THE LONGITUDINAL SINUS—ITS ADAPTABILITY IN PROCURING BLOOD FOR DIAGNOSIS—ITS USE IN TRANSFUSION OF BLOOD, AND FOR DIAGNOSTIC PURPOSES—AN IDEAL METHOD IN INFANCY. (New York State Journal of Medicine, May, 1919, p. 183.)

The author summarizes as follows: The sinus route is safe and most easily accessible. There is no danger of transmitting infection if the skin and needle are sterile. The needle should be very sharp. Some operators prefer a short bevel point. I have best results with a long bevel point, but this is an individual preference. The longitudinal sinus is the most easily accessible venous current in the body. Its large caliber is well adapted for both procuring blood rapidly when a Wassermann reaction is required or when an intravenous medication is to be given. The site is especially indicated for rapid transfusion in marantic infants. The shock incident to the exposure of the vein, be it ever so slight, is avoided in the sinus route. Salvarsan injections are very easily given through the longitudinal sinus. When toxic diphtheria requires the most rapid administration of antitoxin, the sinus route is most advantageous. Intracranial pressure has never been noted by me following this method of transfusion. When bulging fontanel was noted, it was usually associated with distended lateral ventricles, and is no contraindication to sinus treatment. When a warm saline injection is indicated, from 50 to 100 c.c. can easily be added to the circulation. When blood letting is indicated, as in convulsions, the sinus route offers the most convenient place for depletion. HAROLD R. MIXSELL.

HESS, ALFRED F., AND UNGER, LESTER J.: SCURVY viii. FACTORS AFFECTING THE ANTISCORBUTIC VALUE OF FOODS. (American Journal of Diseases of Chrildren, April, 1919, p. 221.)

Hess and Unger, in a review of the literature, show that during the late war there was considerable scurvy among the troops of the various armies; least of all along the western front. The scurvy was mainly of the latent or subacute variety and influenced the character of some of the infectious diseases, and may well have been a factor in the congelations occurring among the soldiers in the trenches. It also prevailed among the civilian population to a degree far greater than during peace times. The authors claim that an infant requires fully 1 pint of fresh raw milk daily to protect it from this disorder. If the milk is pasteurized, or stale, or heated for a second time, or rendered more sensitive to deterioration by means of an alkali—and particularly if more than one of these influences are operative—more than a pint is needed. The fact that there is an inverse relationship between the amount of milk consumed and the tendency to scurvy shows that we are not dealing with an exogenous toxin and argues in favor of the disorder being primarily a deficiency disease. Milk does not necessarily lose its antiscorbutic value in the course of drying. If it is fresh at the time of drying, and is dryed rapidly, it retains sufficient of the protective factor to have a curative value. They emphasize the fact that babies fed on pasteurized milk should receive an antiscorbutic from the time they are a few weeks old. A small amount of orange juice will answer the purpose. Orange juice, if filtered, boiled, and rendered faintly alkaline, may be given intravenously without causing any slightly untoward reaction. Prompt cure can be accomplished in this manner. Diuresis and catharsis do not play an important rôle in the cure of scurvy, as they may be stimulated to a high degree without alleviating the symptoms. Dehydrated vegetables were ineffective but an equivalent amount of fresh vegetable brought about a cure. They claim that dehydration does not necessarily destroy the vitamin but the efficacy of vegetables depends more on their age, freshness previous to dehydration and their manner of preservation. They have used strained canned tomatoes in place of orange juice for infants and find that this substitute is a very effective antiscorbutic and is well borne by babies a few weeks of age. It has the advantage of low cost and availability, and therefore is of particular value to the infants of the poor. C. A. LANG.

DANDY, WALTER E.: FLUOROSCOPY OF THE CEREBRAL VENTRICLES. (Bulletin of the Johns Hopkins Hospital, February, 1919, p. 29.)

The author emphasizes the value of fluoroscopic examination of the cerebral ventricles after their injection with air. He does not describe this latter process in this article, but states that in over 75 cases no deleterious results have occurred. The normal sized ventricles have been observed in an adult and in two children. The following conclusions were reached:

1. The lateral cerebral ventricles when filled with air can be clearly seen under the fluoroscope.
2. The results in adults are equally as good as in children.
3. By fluoroscopy, hydrocephalus can be accurately diagnosed at all stages and several unsuspected cases have been so demonstrated.
4. The diagnosis of a false ventricular hernia was made with a certainty.
5. Fluoroscopy of the ventricles has practically the same range of utility as ventriculography. Following injections of air into the ventricles both methods should be used. HUGH CHAPLIN.

BOOK REVIEWS

THE DISEASES OF INFANCY AND CHILDHOOD. BY HENRY KOPLIK, Attending Pediatrist to the Mount Sinai Hospital; Consulting Physician to the Hospital of Deformities, formerly Attending Physician to the Good Samaritan Dispensary, the St. John's Guild Hospitals, New York; Ex-President of the American Pediatric Society; Member of the Association of American Physicians and of the New York Academy of Medicine. Philadelphia. Lea & Febiger, 1919.

The fourth edition of Dr. Koplik's book should be well received. The advances in the various fields of pediatrics since the third edition have necessitated many changes in this new volume. Among these, acidosis in infancy and the various problems of infant feeding have received considerable attention. The chapters on infectious diseases, syphilis, tuberculosis, blood and circulatory diseases have been greatly revised. Statistics have been introduced throughout the work, especially in the chapters on the infectious, respiratory and cardiac diseases. Many new plates have been used and are taken from actual cases in the experience and daily work of the author. The book is still like the other editions a "one man book," dependent upon the author's personal experience, and is designed for the use of students and practitioners of medicine. The volume contains over 900 pages, is extremely well written, illustrated, and bound, and in the opinion of the reviewer, is sure to be well received.

THE OPERATIONS OF OBSTETRICS. EMBRACING THE SURGICAL PROCEDURES AND MANAGEMENT OF THE MORE SERIOUS COMPLICATIONS. BY FREDERICK ELMER LEAVITT, M.D., formerly assistant Professor of Obstetrics and Gynecology, University of Minnesota; Obstetrician to the City and County Hospital, the St. Paul Hospital, the Bethesda Hospital, etc., St. Paul, Minnesota. St. Louis. C. V. Mosby Company, 1919.

This would be quite an unusual book if it were criticized alone from the standpoint of its illustrations. There are almost 250 of these and seldom does one see better or more numerous illustrations than these are. One can hardly turn over a page without striking an engraving illustrating the text. From the standpoint of printed matter it is also a valuable addition to the numerous volumes of obstetrics in that it takes up the operator's point of view. As the author states in his preface, only enough pathology is introduced to give reason for, and insight into the various procedures described. As far as we know this is a comparatively new angle to attack the subject. It is well written in an easily readable style, is well printed and bound, and in our opinion will prove a ready seller.

DEUX CENTS CONSULTATIONS MEDICALES POUR LES MALADIES DES ENFANTS. PAR DR. JULES COMBY, Medicin de l'Hôpital des Enfants-Malades, Cinque Edition, Paris: Masson et Cie. Editeurs, Libraires de l'Académie de Médicine, 120 Boulevard Saint-Germain, 1919.

As the name of this little volume indicates, it is a compilation in alphabetical order, of the treatment of 200 diseases of children. Dr. Comby needs no introduction to this country and one can only say that if possible the fifth edition is more complete and up to date than the fourth. He has added some few new diseases and has made changes necessitated by recent medical progress. If one wishes a consultation with Dr. Comby, here it is.

PRÉCIS D'HYGIENE INFANTILE ET DE PUÉRICULTURE PAR LE DR. COMBE, Professeur de Clinique Infantile a L'université de Lausanne, Chef du Service des Enfants a L'Hôpital Cantonal, Ancien Médecin des Écoles de la Ville de Lausanne. Professeur d'Hygiene Infantile a l'École Supérieure des Jeunes Filles. Avec 193 figures dans le texte. Paris. Libraire J.—B. Baillière et Fils, 19 Rue Hautefeuille. 1918.

This well written book by Dr. Combe is frankly a fine bit of propaganda in favor of prophylaxis against infantile mortality, together with an added insistence on hygiene of infancy. Both of these, especially in war-torn France, have assumed an importance of the greatest magnitude. Puericulture, from the standpoint of the state, is vastly more important and profitable than the prolongation of old useless lives. It is for this reason, therefore, that modern states and cities are insisting on modern instruction to doctors on this important subject, and by means of them instruction to the young girls—the mothers of the future. This we feel has been done, and well done, by Dr. Combe in this book. He divides his subject into nine books or sub-heads. Infant mortality and its prophylaxis; Hygiene of the new born; Hygiene of the nursing infant; Hygiene of the skin; Hygiene of the locomotive system; Hygiene of the digestive system; Maternal nursing; Wet nursing; Artificial feeding. All these are very carefully worked out and well illustrated. To one who reads French this book is well worth while.

THYMUS DEATH (Archivos Españoles de Pediatria, 1918, II, 208). J. Palancar and L. R. de Arcaute declare that microscopic findings are more conclusive as testimony than the mere size and shape of the thymus, in cases of sudden death for which the thymus seems to be responsible. In one of their two cases the thymus of the 4 months child weighed 28 gm. Except for a convulsion at 2 months, the child seemed healthy and the parents were young and healthy. The microscope showed indications of intense functional activity and proliferation. Another child in the family had died suddenly at the eleventh month, but the thymus was not investigated in this case. Their conclusion is that the thymus in certain cases may exert a toxic influence independent of any mechanical action. With hyperplasia of the thymus there may be perverted functioning, which may entail the gravest accidents. In their cases the lymphatic system seemed to be otherwise normal. This suggests that there is not the connection between the thymus and the lymphatic apparatus which some assume. Children have been born with hyperplasia of the thymus but the writers know of no instance of congenital hyperplasia of the lymphatic system. Probably the mechanism is not always the same in the cases of sudden thymus death, toxic factors in some and mechanical factors intervening in others. Perverted functioning of the thymus is most common and most evident in infants under the age of 16 months. The toxic action seems to be most injurious for the cardiovascular system. The microscopic findings in the case mentioned showed a remarkable number of subpericardial and subcapsular ecchymoses, one apparently in every terminal arteriole. The microscopic findings are illustrated and the literature on thymus death is analyzed.—*Jour. A. M. A.*

ARCHIVES OF PEDIATRICS

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ORIGINAL COMMUNICATIONS

ABRAHAM JACOBI

AN APPRECIATION

A great physician and a great citizen is gone, but his works do follow him. As a physician and pediatrist we knew him and little can be said to us, who month by month read these pages. The words of Dr. Sayre in his funeral address are unquestionably true, that no physician since Benjamin Rush, has exercised such a potent power in public life as did Abraham Jacobi.

The early life of a man often indicates what his future will be, but not always. Many an unpromising boy has developed into a successful man; many a brilliant boy has turned out a mediocre man. Neither of these conditions apply to Jacobi. Appreciation of his character can be obtained only by study of his student days. Born in Westphalia in 1830, we find him in 1848 in the University of Bonn, engaged with such men as Schurz, Siegel, Kunlich, Ottendorfer, Binder, Von Holst, and Krackowizer, in the student uprisings of that year, uprisings whose object was to curb the autocratic power of the rulers. He was imprisoned again and again and was held under outrageous hardships for two years, but refused to abandon one iota of his principles. Escaping from prison, he sought America where, he believed he would have freedom and opportunity. How he utilized the opportunities he was so well able to appreciate and how he fought every tendency that threatened to restrict true liberty, we all know. The principles of his youth, for which he suffered when helpless and alone, he never abandoned when prosperous and powerful in influence. The Jacobi of 1919 was consistent with the Jacobi of 1848. From first to last he was a practical idealist, lofty in his ideals, strong in his convictions, without fear in maintaining them.

That was a remarkable group at Bonn in '48: Krackowizer, Siegel, Schurz, and Jacobi; all suffered imprisonment and all came to America. Krackowizer died many years ago, a physician, rich in honors and public esteem. Siegel became a Major-General in the American army during the civil war and by his example led thousands of citizens of German birth to the defense of the nation they believed in. His statue stands on Riverside Drive. Schurz became a General and later one of the most influential statesmen of the country and a member of the President's cabinet. His statue stands on Morningside Drive. These statues are a few of the many evidences that this nation respects the American German. Jacobi rose to the highest pinnacle which can be attained by a member of the profession he chose.

Could the autocracy, seventy years ago, have had the wisdom to see what its treatment of these young men, and of many others, would lose to Germany and the gain it would bring to America, the history of the last half century would have been very different. It is pleasant to know that Dr. Jacobi lived to see the vindication of the principles for which he suffered in his youth and to see twenty-one nations of the earth rise to quell the despotic power which treated him so brutally.

Dr. Jacobi's character was many sided. Many, who thought they knew him well, saw but one or two sides and find it difficult to realize the opinion of others who saw other sides. It is, therefore, difficult in this brief space to give a true picture of this many sided man. In broad terms, it seems to me that his character can best be viewed from three sides: the physician, the citizen, and the friend of young men.

Some of the hardest taskmasters are those who have worked their own way up to success and power through labor and dis-

ABRAHAM JACOBI

couragement. It is an anomalous condition, but still a fact, that some self-made men have little sympathy for young men who are going through the trials which they have themselves surmounted. Dr. Jacobi was not of this type. He had a genius for picking out the true from the spurious and had little patience with the spurious. I have known few men who more ardently hated sham and chicken-heartedness than did he. He was a friend of young men. Years ago, I had a personal view of this side of his character, and many who read these words, have had the same view and will understand my meaning.

I have already referred to the practical idealism of Jacobi as a man and a citizen, a combination all too rare. His ideals, while lofty, were based on a solid foundation of common sense which rescued him from the errors which many idealists fall into. As one of many examples, his advocacy of civil service reform was a large factor in rescuing the movement from the conscientious but impractical theorists by which it was inaugurated. His practical mind and pungent speech were no small factors in placing it upon the sound basis which has made it acceptible to hard-headed men of judgment and experience.

As to Dr. Jacobi's medical career, nothing need to be said to those who read this journal. We all know the many positions of honor and responsibility which he held. We know that in 1860 he occupied the first chair upon diseases of children established in America; that he was one of the founders of the German Dispensary; that he was one of the founders of the American Pediatric Society and its first president and again president in 1906; that he was a prime mover in the founding of the section of pediatrics in the New York Academy of Medicine and the American Medical Association. He was always an originator and a leader, and never a blind follower.

It is rare that so many talents are given to one man as were entrusted to Abraham Jacobi. He wrapped not one in a napkin and buried it in the earth but developed all that were given to him for the good of his fellow men and the uplifting of his profession.

FLOYD M. CRANDALL.

SOCIETY REPORT

THE AMERICAN PEDIATRIC SOCIETY

THIRTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 16, 17 AND 18, 1919.*

THE PRESIDENT, DR. EDWIN E. GRAHAM OF PHILADELPHIA, IN THE CHAIR.

FOREIGN BODIES IN THE AIR AND FOOD PASSAGES

DR. EDWIN E. GRAHAM, of Philadelphia, delivered the presidential address in which he related his observations on a comparatively large number of cases of foreign bodies in the air passages, and a much smaller number of cases of foreign bodies in the food passages. For this opportunity he said he was indebted to Dr. Chevalier Jackson. The histories and bronchoscopic charts of some of the most interesting cases were presented.

His observations led to the following conclusions:

1. It seemed reasonable to believe that foreign bodies in the air and food passages in children were much more common than was supposed. Statistics tended to show that about 66 per cent. of the cases of foreign bodies in the air passages occurred in children.

2. The period of latency of symptoms which followed the violent dyspnea and choking attack and later the gradual onset and chronic character of the symptoms might lead one to fail to suspect the presence of a foreign body.

3. Foreign bodies were certainly often overlooked as a study of the histories of many of the cases clearly showed.

4. The symptoms varied greatly. The peanut kernel set up immediately a severe laryngitis, tracheitis, and bronchitis. In the peanut cases the older child might survive the acute symptoms, but almost surely would develop pneumonia.

5. Metal objects remained in the lung for a very long while, and did comparatively little damage.

6. There were some foreign bodies that did not cast a shadow on the x-ray plate.

7. The location of a foreign body in the esophagus, that did not cast a shadow on the x-ray plate, might often be diag-

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*Detailed report specially made for Archives of Pediatrics.

nosed by allowing the patient to swallow a bismuth filled capsule. The x-ray showed the location of the bismuth capsule held in position in the esophagus by the foreign body.

8. The patient should not be urged to cough with the hope of expelling the foreign body inhaled in the lungs.

9. Foreign bodies were very rarely coughed up.

10. The physical signs and symptoms varied according to the composition, form, shape and size of the foreign body.

11. One should suspect a foreign body, if the following conditions were present: an unexplained leukocytosis, localized symptoms in one lung that did not clear up under treatment, no tubercle bacilli in the sputum, and a gradual failure in weight and strength.

12. There were no contraindications to bronchoscopy except perhaps weakness in the patient, when time should be given the individual to rally in part.

13. Bronchoscopy should be performed as soon as possible after the entrance of the foreign body.

14. Children did not require the administration of an anesthetic for the performing of a bronchoscopy.

15. The necessity of taking a radiograph of every case that gave a history of having swallowed a foreign body could not be too strongly emphasized.

16. The asthmatoid wheeze was a symptom of considerable importance.

A STUDY OF THE LACTOSE, FAT AND PROTEIN CONTENT OF WOMAN'S MILK.

Dr. Fritz B. Talbot, of Boston, stated that the newer chemical methods made it possible to quantitate accurately the fat, lactose and protein from small samples of milk. The results of the investigation on the composition of milk at different stages of lactation showed that the average amount of lactose in 60 samples of breast milk was 7.19 per cent. with the general tendency for the strength of the lactose to increase throughout the period of lactation. The percentage of fat in the milk of different women varied within wide limits, the lowest mixed milk being 1.5 per cent. and the highest 9.9 per cent. The average amount of fat in the mixed samples was 3 per cent. The average amount of fat in 35 samples, taken only from the wet nurses was 4.18 per cent. It seemed more probable that the percentage of fat depended more upon how completely the breasts were drained and the amount of the late milk, which got into the sample, than upon the stage of lactation. There was a general tendency for the amount of protein to diminish as lactation progressed. A study of the variation of the milk from the beginning to the end of nursing showed that the difference in the percentage of lactose rarely exceeded 1 per cent. There was a greater variation in the percentage of fat but as a rule this was less than 4 per cent. The percentage of protein rarely varied more than a few tenths and was sometimes lower after nursing and sometimes higher. A study of the milk taken from the right and left breast of the same woman at about the same time as a rule tended to have the same composition, but occasionally a wide variation was found. In studying the variations in the composition of milk taken at 3 hour periods, during the course of a single day, the volume of milk was shown to have a tendency to diminish as the day went on. The percentage of fat was found to be higher, as a rule, after mid-day. The variation in the amount of lactose and protein, however was very slight.

Discussion.—Dr. L. Emmett Holt, of New York, said that the figure Dr. Talbot had given for sugar was about what they had found in their laboratory. There were many disturbances of digestion attributed to fat which were due to sugar. A baby might be gaining in weight and yet have 8 or 10 thin, sour, green stools per day, and it could be shown that this diarrhea was due to the volatile fatty acids caused by the sugar. Clinically the way to handle these cases was to dilute the milk and change the frequency of feeding. In such cases an examination of the stools would reveal the presence of fat and this led to the erroneous assumption that it was the fat in the diet that was responsible for the trouble. The reason the stools contained fat was because the fermentation of the sugar caused diarrhea and interfered with fat digestion and absorption, and hence the fat appeared in the stools. We must get away from the mistaken idea that breast milk always contained 7 per cent. of sugar or less, and we must learn that many disturbances of digestion might be due to sugar. If the child did not vomit, the disturbance might be attributed to sugar. The fatty acids, produced by sugar fermentation, were often so strong as to give the stools a sour odor and they might be so acrid as to cause excoriation of the buttocks.

THE PATHOGENISIS OF CERTAIN NUTRITIONAL DISORDERS.

DR. W. MCKIM MARRIOTT, of St. Louis, first considered the severe and acute toxic state observed in infants who had suffered from a severe watery diarrhea. The condition had been referred to as an "alimentary intoxication" because the administration of food resulted in an increase of all the symptoms. A more rational view was that the giving of food, especially easily fermentable carbohydrate, led to increased water loss from the body by way of the bowel, and that the symptoms might be entirely referred to water loss.

The blood plasma of infants suffering from this condition was invariably greatly concentrated, as was easily demonstrated by means of the refractometer, which determined accurately the protein percentage. The protein of the serum of normal infants averaged 6 per cent; in those dessicated, as the result of diarrhea, the protein might rise as high as 9 or 10 per cent. This dessication explained children's great loss of weight.

.The decrease in blood volume brought about by dessication led to a greatly diminished volume flow of the blood. This had been measured by the calorimetric method of Stewart and had been found to be decreased to as low as 15 per cent. of the normal. Gesell and Almroth Wright demonstrated experimentally in animals that a decreased volume flow of blood resulted in a decreased alkaline reserve of the blood, or in other words acidosis. The acidosis was evidently the result of suboxidation in the tissues. An additional factor was the retention of acids in the body through failure of excretion by the kidneys. Renal activity was greatly decreased by concentration of the blood and poor volume flow. The acidosis was the cause of the "air hunger" type of respiration observed in some of these infants.

When blood volume was diminished, arteriolar constriction occurred; this might be considered as a compensatory mechanism to maintain blood pressure. Constriction of the arterioles piled up red corpuscles in the capillaries, and this explained the peculiar gray color of these infants. The corpuscular counts on the capillary blood were distinctly higher than in venous blood.

Dehydration of the blood resulted in a disturbance of the heat regulatory mechanism and fever occurred. The temperature fell when normal conditions in the blood were restored. In experimental anhydremia in animals and in infants, vomiting was a frequent symptom. It ceased in most instances when sufficient fluid was introduced into the body.

The diminished flow of blood rendered conditions in the intestinal tract unfavorable for digestion and absorption of food. The whole clinical picture presented by these infants resembled closely that seen in "wound shock." In both conditions there was a diminished blood volume and volume flow, resulting in articular constriction, low blood pressure, and frequently acidosis. The cause for the diminished blood volume was quite different, however, in shock and in infants, but the end result was practically the same.

The term "anhydremia" or "anhydremic intoxication" was accurately descriptive of the condition here considered and was preferable to the undesirable term of Finkelstein, "alimentary intoxication."

Anhydremia occurred from other causes than diarrhea. Diminished fluid intake or vomiting from any cause might lead to this condition. Fever and high external temperatures greatly increased the loss of fluid from the body and, unless this loss were made up, anhydremia would result. The symptomatology of anhydremia was the same, no matter what the original etiological factor. The treatment was also the same. Fluid in large amounts had to be administered. The usual methods were often ineffective, and intraperitoneal injection of normal saline had to be resorted to. The injections had to be repeated at frequent intervals. A small infant might receive as much as 1,500 c.c. of fluid in this way in the course of 24 hours, before the blood had been restored to its normal concentration. In some instances it was impossible to restore normal conditions. When this was the case the infants invariably died.

When it was possible to introduce sufficient fluid and have it absorbed and retained, a rapid cessation of all the symptoms occurred in the majority of instances. The intravenous injection of 10 per cent. glucose solutions, at frequent intervals, was often a valuable adjunct to the saline injections.

The second nutritional disturbance to be considered was also often the result of a severe diarrhea, although it might result from any caûse which might lead to the ingestion and absorption of less food than was necessary to maintain activity and growth.

The condition referred to was the one known as "marasmus," "atrophy," or "decomposition." The condition was analogous to anhydremia; it was the result of insufficient food, whereas anhydremia was the result of insufficient water. The term "athrepsia" was accurately descriptive.

In athrepsia the protein of the blood plasma was somewhat diminished and it had been shown by Bayliss that when the colloids of the blood were diminished it lost its power to retain water. A diminution of blood protein, as the result of partial starvation, led to a decreased blood volume, and the blood atrophies as well as the rest of the body. The volume flow of the blood was decreased in this condition, although rarely as greatly as in anhydremia. There was the same constriction of the arterioles and the same color of the skin. Such infants, with a volume flow of the blood already greatly diminished, could not withstand even a moderate loss of water without succumbing to the more serious manifestations of decreased volume flow. This explained the fact that it was the poorly nourished infants who most readily fell into the severe toxic states.

The obvious treatment of athreptic infants was the administration of considerable amounts of food. Unfortunately the tolerance to food was low, probably on account of the poor circulation of the atrophied blood in the mesenteric vessels. If food could be taken the blood was gradually restored to normal, but the process might be a long one. The period of repair might be somewhat shortened by artificially increasing the colloids of the blood. This might be done by a transfusion or, almost equally well, by frequently repeated injections of gum acacia, a harmless colloid. The best results in feeding with artificial food had been obtained with whole lactic acid milk to which a mixture of carbohydrates was added. The most suitable carbohydrates were dextrin and glucose; maltose was also serviceable. Commercial "corn syrup" was such a mixture and had proven most effective in his hands. It was often necessary to feed over 200 calories per kilo of body weight. Unless sufficient food was given, all other means of cure were useless. The acacia injections were an adjunct, not a substitute, for food.

Discussion.—DR. OSCAR M. SCHLOSS, of New York, said that pediatric literature contained many references to the digestibility of fat, protein and carbohydrate, but said very little about water. It seemed that a proper proportion of water was most important as Dr. Marriott's paper had illustrated. These children, who were suffering from intoxication, were always recognized as being in a state of dehydration. He had a number of times seen a marked acidosis disappear without the administration of sodium bicarbonate, the explanation being as Dr. Marriott had shown.

A STUDY OF THE RELATIONSHIP OF CONVULSIONS IN INFANCY AND CHILDHOOD TO EPILEPSY.

Dr. John Lovett Morse, of Boston, presented this paper in which he said he had studied 107 cases in which the primary cause for attendance was convulsions. No cases were included in which there were any evidences of acute or chronic cerebral disease. The objects in the study were first, to determine what proportion of the children, otherwise apparently normal, having convulsions, had epilepsy or developed it later; second, to find out, if possible, whether there was anything in the history or in the manner of the development of the convulsions to show whether or not they were manifestations of epilepsy, or whether they would be followed by or developed into epilepsy later.

Ten of the cases showed evidences of spasmophilia. The convulsions ceased in all cases, but one of the babies became feeble-minded. It was possible that in this instance the convulsions were due to some other cause than the spasmophilia. It would seem, therefore, that convulsions which occurred in babies with spasmophilia and which were presumably a manifestation of spasmophilia were not likely to lead to the development of epilepsy later.

In 3 instances the convulsions occurred in the course of whooping-cough. Epilepsy developed in one of these children. Convulsions occurring in the course of whooping-cough must, therefore, be regarded seriously.

There were 39 cases in which there was a single convulsion or a series of convulsions at the onset of some acute disease or with an attack of acute indigestion. Thirty-five of these children recovered. Two became epileptic and feeble-minded. A third had petit mal and a fourth might or might not be an epileptic.

There were 55 cases in which there had been repeated convulsions during a considerable period or in which there had been repeated attacks suggesting petit mal. Taking 7 years as an arbitrary standard, only 21 of these cases could be considered normal at present. An attempt had been made to determine if there was anything in the history or character of the convulsions which would aid in determining in a given case whether epilepsy was likely to result in the future or not. The results of this attempt, however, had been rather unsatisfactory. It was impossible to tell from the nature of the early attacks as to the nature of the attacks when epilepsy developed later. The longer the attacks had persisted the more probable was the diagnosis of epilepsy. When there was no apparent etiology or when the cause of the attacks was apparently an injury or a severe labor, epilepsy was far more likely to develop than when the apparent cause was a disturbance in the digestive tract. The longer the attacks had persisted the more probable was the diagnosis of epilepsy. General impressions which could not be explained had a certain value in diagnosis. There was no way to determine immediately when a baby or child had a convulsion, or had repeated convulsions, or repeated attacks suggesting petit mal, whether or no it had epilepsy or would develop it later.

Discussion—DR. HENRY KOPLIK, of New York, said that in the main he agreed with Dr. Morse. Usually if one applied the electrical test to these babies he could determine whether they were true spasmophiliacs or not. In the vast majority of spasmophiliacs epilepsy, as that condition was understood, did not occur later in life. One must be cautious in making a diagnosis of epilepsy simply because a child had a few convulsions if the child was otherwise normal. It was well to remember that spasmophilia might occur later in childhood. He had rerecently seen a child who had convulsions for the first time at the age of 5 years. Again, unless there was a history of epilepsy in the family, one should be cautious in making a diagnosis of epilepsy during the early years of a child's life.

DR. L. EMMETT HOLT, of New York, said that Dr. Morse's conclusions were borne out by his experience, namely, that a large number of children, that were expected to have epilepsy, did not have it. The general practitioner and the neurologist were more apt to regard these children as prone to have epilepsy than was the pediatrist, because the pediatrist saw convulsions so often, and the great majority of these children did not have epilepsy. Great pressure, or even a moderate amount of pressure, might cause hemorrhage and convulsions and as a consequence the child might become feeble-minded and later epileptic. He had seen a number of these cases, particularly in large children, born at term. Recurring convulsions with a sharp rise of temperature, even if there was not much indigestion present, were not serious, but where babies developed convulsions without rise of temperature and without assignable cause, they should be regarded with suspicion. Dr. Morse's figures in reference to the relation of the convulsions of whooping-cough to epilepsy, were based on insufficient data to warrant his conclusions. Unless there was some underlying peculiarity of the nervous system, epilepsy was not likely to follow the convulsions of whooping-cough. In speaking of prognosis, Dr. Holt said that the pediatrist should be taught the importance of prognosis. The tendency at present was to lay undue emphasis on diagnosis and the student was likely to think that when he had made the diagnosis he had done all that was necessary. There was no question in prognosis more difficult than the one Dr. Morse had brought before them.

Dr. Henry F. Helmholz, of Evanston, Ill., suggested that possibly acute conditions, particularly gastrointestinal disturbances, might be a factor in changing a latent spasmophilia into an active one. He said it seemed to him that the main point made was, if there was temperature at the onset of illness, convulsions associated with it were not of great importance so far as the diagnosis of epilepsy was concerned.

Dr. Fritz B. Talbot, of Boston, emphasized the fact that in considering this question they were dealing with a symptom and not with a disease. If this symptom was due to spasmophilia they would expect to find some change in the blood calcium. They had determined the blood calcium in a small number of spasmophiliacs and had found it lowered.

Dr. Morse, in closing, said he had not considered breath holding as a symptom of spasmophilia. As to the birth hemorrhages, he had left out all cases in which there was any sign of injury to the brain. When there was no sign of injury how was one to know whether there was hemorrhage or not? They saw a number of cases for diagnosis as to whether they had epilepsy or not, and if the children had convulsions over a long period of time they did a lumbar puncture, a Wassermann test, examined the stools and urine, and gave the child a thorough physical examination. Then they singled out cases in which they found nothing to account for the convulsions and followed them up. As to whether older children had spasmophilia, he could not say. It did not seem to him, in cases in which a child had a convulsion say once a year, that it was spasmophilia. It scarcely seems possible that spasmophilia would show itself so rarely.

CERTAIN ASPECTS OF CUTANEOUS HYPERSENSITIVENESS.

Dr. E. C. Fleischner, of San Francisco, presented experimental proof that cutaneous hypersensitiveness was not present in sensitized, uninfected guinea pigs. He discussed the value of cutaneous hypersensitiveness in the diagnosis of chronic diseases of guinea pigs, including tuberculosis, abortion disease, rodent paratyphoid, and of undulant (Malta) fever. He concluded that cutaneous hypersensitiveness was always an indication of the presence of a focus of infection. He could find no evidence of its being an indication of immunity. He also demonstrated the similarity of bacillus melitensis infections in guinea pigs with those of the bacillus abortus, giving conclusive evidence based on pathogenicity, apparently identical microscopic findings, gross changes involving the viscera, cutaneous hypersensitiveness, and some evidence of a positive relationship.

QUARANTINE AND DISINFECTION IN SCARLET FEVER.

Dr. J. Claxton Gittings, Lt. Col., M. C., U. S. A., of Philadelphia, stated that the first assignment of patients to the U. S. Army General Hospital, No. 9, consisted of 139 cases of scarlet fever transferred in February, 1918, to relieve the pressure in the wards of a nearby camp. The hospital functionated in a hotel of the orthodox double design, which was admirably suited for quarantining 2 entire sections. It was possible to secure absolute lack of contact between patients and the healthy, except in the inevitable instances in which orders were not obeyed. The nurses on duty in the wards were isolated as to their sleeping quarters and mess. The ward attendants slept in a portion of the contagious wards, but were allowed to mess together in the mess hall on the lower floor, after change of caps, gowns and, presumably, disinfection of the hands.

The patients were admitted to the hospital in every stage of scarlet fever, from the 2nd to 35th day, 20 per cent. being within the first 5 days of the disease. Opportunities for contagion therefore were numerous, and 5 additional cases that developed from contact were treated in the wards. Two of the 5 occurred in assistants and ward attendants, after they had 1 or 2 weeks service in the wards. One patient was taken ill 6 days after preparing a large number of infected blankets for sterilization. He had nursed through the epidemic and no particular caution was deemed necessary in assigning him to this work. The agency of the infected blanket was not positive but strongly suggested. An instance was cited of a patient, "A," who developed a submaxillary adenitis on the 42nd day of his disease. This was supposed at first to be mumps, but in 12 days suppuration occurred and, on the 54th day of his disease, he was transferred to the surgical ward for operation. The surgeons were informed of all the circumstances and agreed to accept the case under proper precautions. The abscess was opened 5 days before the admission of patient "B." Both patients, "A" and "B," were dressed in the same dressing room, the surgeon stating that patient "A" was always dressed after every other case. The patient "B" stated, however, that on at least one occasion he was dressed after "A." Patient "B" became infected and it was impossible to say whether the infection resulted from any fault in technic or whether he had been infected prior to admission to this hospital. No other cases developed after "B."

A uniform minimum length of quarantine of 42 days from the day of entry into the camp hospital was enforced. On the 40th day each patient was carefully examined by the assistant chief of the medical service. All those who showed any evidence of abnormality in the throat, nose or ears were inspected by the throat and nose specialist, who decided whether or not the patients gave any evidence of being potential carriers of contagion. At the end of the quarantine period, 59 per cent. of the patients were ready for discharge; 41 per cent. required more or less treatment. The average period of quarantine therefore was 47 days. This extension of time was due partly to the occurrence of several cases of mumps. At the conclusion of quarantine, each patient was given an orthodox bath, shampoo, change of clothing, and was then transferred to a clean ward in another part of the building. All soiled linen was soaked in 2 per cent.

liquor cresolis solution for 2 hours or longer before being sent to the laundry. Shoes, hats and leather belts were exposed to formaldehyde gas in sealed closets for 24 hours. Blankets and patients' woolen clothing were sterilized in the autoclave. After the evacuation of the ward, the hall carpet and paper wadding were rolled and carefully dropped from a window and then spread out in an unfrequented space in the hospital grounds, and left to air for 48 hours. After this, the carpets were carefully brushed and stored. (The use of carpets was unorthodox, but it must be remembered that this was a hotel and no other sound deadener was available.) The floors of the wards and halls were mopped with a copious supply of the 2 per cent. solution of cresolis and all flat surfaces, beds, furniture and wood work were wiped off with the same solution. The mattresses were left on the beds and the pillows in the rooms and every window in the ward was left open for 3 days. Within 2 weeks these wards were again occupied and have been occupied ever since. Until February, 1919, there had not been another case of scarlet fever observed in this hospital. So far as could be learned, none of these patients carried the contagion to any one in Lakewood or elsewhere.

Of the 144 patients, 56 exhibited no defects of any kind; 10 exhibited defects which should have been the cause for rejection for military duty, among these defects being such conditions as gastric ulcer, valvular heart disease, hysteria, chorea, tuberculosis and Graves' disease; 11 showed what might be called serious complications—pleurisy, otitis media, mastoid infection and subsequent cerebellar abscess, nephritis, myocarditis; 37 showed mild complications, such as transient albuminuria, bronchitis, functional cardiac disorder, pharyngitis, and peritonsillar abscess; 13 suffered from the symptom complex which had been described at this hospital as functional cardiac disorder.

Until the infecting organism of scarlet fever was demonstrated, the proper length of quarantine would be open to argument. In accounting for the spread of this disease, the chronic carrier would seem to be the most likely agent, as was known to be the case in meningitis and diphtheria. A priori, the unhealthy nasopharynx and throat might be under suspicion of harboring the infection. Examination by a throat specialist might enable us to prevent the discharge of the potential carrier and possibly to hasten the discharge of a healthy person. In mild cases, with healthy throats, 35 days or less might cover the danger period. It was much better, however, to err on the side of safety than to run any risk of a premature discharge. The factor of the human carrier in the etiology of contagious diseases was being accepted to such an extent as to make it extremely questionable whether any measure, other than thorough cleansing, was necessary after infection. Formaldehyde gas, in proper concentration and with sufficient moisture, probably would destroy the organism of scarlet fever. That this optimum result was obtained was extremely doubtful.

Disinfection of linen and woolens and disinfection and removal of the dust which accumulated on floors and furniture, followed by thorough sunning and airing, appeared to be the actual requirements for safety.

Discussion—DR. D. J. MILTON MILLER, of Atlantic City, said that there were those who believed that desquamation from the epidermis in scarlet fever was not contagious, and, if that was the case, what was to be their belief with reference to quarantine? Of course they could not keep the patient quarantined if desquamation continued indefinitely. The catarrhal symptoms, on the other hand, often disappeared in a mild case after the acute stage, so that the duration of catarrhal symptoms could not serve as a guide to the period of quarantine. Until they had more definite information, he felt that desquamation should be the ordinary test to determine the period of quarantine, and that quarantine should be continued until desquamation was complete.

DR. J. P. CROZER GRIFFITH, of Philadelphia, recalled that the former idea in reference to the contagion of scarlet fever was quite different from the present belief. People used to think that the contagion of scarlet fever could be carried in clothing for many years. They now believed that scarlet fever was communicated by contact, and personally, he did not think that desquamation was a criterion as to the period of time during which the disease was contagious. There were other skin diseases besides scarlet fever in which desquamation might occur, and such diseases might exist coincidentally with scarlet fever.

DR. HENRY HEIMAN, of New York, said he was glad they were getting away from the time honored superstition that scarlet fever was carried in clothing. A person to acquire the disease must come into contact with another person who had the disease or with a carrier. The disease was conveyed more easily by a person actually having the disease than by a healthy carrier. Formerly the period of quarantine in New York was 40 days, while at the present time it was only 30 days. He stated that the susceptibility of children to measles was 90 to 95 per cent., while the susceptibility to scarlet fever was only 30 or 35 per cent.

Dr. Gittings, in closing, said that he felt that 30 days quarantine was perhaps sufficient. In the camps a period of 6 weeks was required. There was no question but that where a child or a susceptible person would come into contact with the patient, it was better to err on the side of safety and to continue the quarantine for 6 weeks.

A STUDY OF THE CHOLESTEROL METABOLISM OF INFANTS.

Dr. K. D. Blackfan and Dr. J. L. Gamble, of Baltimore, presented this contribution, in which they stated that cholesterol, an important constituent of tissue cells, might also bear important relations to certain physiological processes. Cholesterol, or substances very nearly identical, were present in all natural foods. The difficulty of finding a food free from cholesterol or cholesterol substances had prevented satisfactory proof by animal feeding experiments as to whether or not cholesterol synthetized within the body. If cholesterol was not synthetized, an adequate amount must be provided in the food in order to maintain the chemical structure of the tissue cells and provide for growth. In the food of an infant the amount of cholesterol was roughly proportional to the amount of fat present.

It had not been possible to detect any cholesterol in the stools of infants. Apparently none of the cholesterol excreted by an infant underwent reduction in the intestinal tract. This fact made it possible to study the cholesterol balance in infants. They had used the assumption that the finding of a consistently negative cholesterol balance in normal or gaining infants would indicate cholesterol synthesis.

It had been necessary to modify considerably an existing colorometric method for measuring cholesterol in order to determine with accuracy the cholesterol content of milk and stools. The cholesterol balance of several infants had been determined.

With one exception a large negative balance was found. It was proposed to obtain further data on this point. The results so far obtained suggested that cholesterol was synthetized within the body. The relation of cholesterol to maintenance and growth apparently did not depend on the amount of cholesterol in the food.

CERTAIN NUTRITIONAL DISORDERS IN INFANTS ASSOCIATED WITH A PROTEOLYTIC INTESTINAL FLORA.

Dr. Langley Porter, of San Francisco, called attention to the classical investigations of Eserich, Moro, and others, who established the knowledge of the stool flora of infants. The work of Kendall, Herter, and Torrey was also quoted, especially the recent demonstration by the latter that it was possible to change the intestinal flora of dogs by feeding large quantities of dextrin or lactose. The writer showed by charts—drawn up after the investigation of many stools evacuated by healthy children—that there was a standard flora in the intestines of healthy babies and children. By means of other charts, based upon the stool examinations of children who suffered from different types of nutritional disturbance, it was demonstrated that in such cases the flora in the intestines had departed from the normal. The normal stool showed a flora composed almost equally of aciduric and protein-splitting organisms. Normally it consisted in the maintenance of an antagonistic balance between these. In the groups of nutritional disorders studied, the flora all showed a predominance of proteolytic types of bacteria. These children all exhibited clinical disturbances evidenced by symptoms of toxemia. They all responded to limitation of milk, meat, and egg-white, together with a diet high in lactose and dextrins, by a swing of the intestinal flora to a predominance of fermentative forms. Coincidently with this change, amelioration of the clinical symptoms took place. On a rational diet, well being had been maintained and the stools had remained at a floral balance approximating the normal standard. Five types of alimentary disturbances were studied; 4 in infants and 1 in older children, the first corresponding to the balance disturbance of Finkelstein; the second, to a similar unbalance in older children; the third, to a type including certain acute alimentary intoxications, and the last, to subacute and chronic conditions of alimentary disturbance with symptoms of intoxication. In all these, proteolytic organisms dominated the fecal flora. In all the return to health was coincident with the establishment of a normal flora in the intestines.

The writer made no claim to have established an etiological relationship between these ailmentary intoxications and the flora of the intestines, but he pointed out these facts, and held that the possibility of such a relationship could not be ignored and should be made the subject of further and more intensive investigation.

Discussion—Dr. Henry Koplik, of New York, said he did not wish to criticize the milk Dr. Porter used, but that a great deal depended upon how protein milk was made. Unless it was properly made, it rather hurt the baby and might cause a bloody diarrhea. Again the milk might be stored too long before being prepared and here they were in the hands of the purveyors of milk. In cases such as Dr. Porter described, he had been accustomed to eliminate the sugar from the diet. Dr. Porter gave lemonade while he eliminated all sour foods. Dr. Porter obtained good results with his method and he (Dr. Koplik) had obtained good results with his method.

Dr. E. C. Fleischner, of San Francisco, said that any method that offered us some criteria upon which to base our feeding of this type of infants, which Dr. Porter had described, was acceptable. It was better to have a method based on a logical foundation than to proceed in an empirical way. Where butyric acid fermentation was concerned, it was better to leave the fat out of the diet and he thought that was the method Dr. Porter had followed. If the etiological factor was the proteolytic anaerobes, as it frequently was, then to get at the root of the evil the protein element must be considered, and both fats and proteins must be eliminated, or reduced, at least temporarily. The great value of the plan Dr. Porter had presented was that it offered a tangible basis upon which to treat their cases.

Dr. Porter, in closing, said that during the discussion mention had been made of the Czerny school. The Czerny school had been of great value as a guide in the study of alimentary disturbances but it was not entirely beyond criticism. He thought anybody, who had studied the subject, had been struck by the fact that they could not feed high fats when the protein was low, as was shown by soapy stools, when this kind of a diet was employed; that was the reason Finkelstein had resorted to the albumin milk.

He had been asked to discuss the butyric fermentation of the anaerobes. He might say that they were at work now on this subject and were very much at sea as to the rôle of the anaerobes. Their part was exceedingly complex and one about which very little was known.

Another question was whether it was true in children as in dogs that excessive gas production was the result of protein feeding and not of sugar, and here again was the question of the anaerobes and the blood non-protein nitrogen. He believed that it would be shown that the blood non-protein nitrogen would be increased when the anaerobes were high.

TRANSFUSION IN INFANTS AND CHILDREN—THE INDICATIONS AND DANGERS.

Dr. Henry Koplik, of New York, said that in the field of transfusion in the new born and in infants and children vast advances had been made in the direction of life saving.

The application of transfusion in the new born was as follows: (a) in cases of uncontrollable hemorrhage from wounds, umbilicus, or scalp hematomata; (b) in forms of frank melanemia with hemorrhage from the intestines—the subcutaneous and gastric hemorrhages; (c) concealed melena, in which the outward objective signs of hemorrhage were slight, such as occasional ecchymosis on the surface, but in which the evidence of internal hemorrhage was great, such as critical loss of weight; intense anemia, amounting to phenomena of exsanguination; very slight signs of hemorrhage from the intestine, with marked hemorrhage into cavities, such as the subarachnoid space; (d) there were cases of severe and continued hemorrhage in the new born from surgical wounds such as circumcision, hemorrhages which were of parenchymatous character and were exsanguinating to a degree. In these cases we must conclude, as in the cases in which the hemorrhage occurred beneath the scalp, that there was a congenital condition present, a hemophilia.

In hemorrhage of the new born, the greatest success occurred in cases in which the condition was promptly met by transfusion, and this in a positive manner, that was, by the direct introduction of blood or citrated blood into the circulation of the patient.

There were 2 methods now before us from which to choose and the time was scarcely ripe to decide in favor of either. The one method was that of direct introduction of full blood from the donor to the patient's circulation—the Unger or syringe method (Lindemann) and the so-called citrated blood method (Lewisohn). The advantage of the direct blood, unadulterated, was evident if in all cases we could test the donor and recipient for hemolysis. The advantages claimed for the method of citrated blood were: first, that the blood could be transported from donor to recipient at some distance; again that in a great emergency the tests for hemolysis were not necessary in the citrate method. He had used both methods and found both methods applicable. He felt that in many cases the surgeon still lacked the delicate skill in technic and many failures might be due to this. It was extremely dangerous to decide that one method was superior to another unless cases came out of the hands of the same operator who had handled both methods. He had never seen a failure due to full normal blood or citrated blood; it had always been the technic which he would criticize. He had seen cases in which the subcutaneous introduction of serum had absolutely failed to control hemorrhage, or even the subcutaneous introduction of whole blood. In these cases, if they lived, a single definite transfusion succeeded in combating symptoms which the serum and subcutaneous introduction of blood failed to control. The improvement in the patient's condition took place even where symptoms of sclerema, which was often regarded as the forerunner of a fatal issue, set in. Temperature also was not a contraindication for transfusion. Congenital syphilis, with melena, did not contraindicate transfusion, as was shown by the case cited. In the new born, after comparison of methods, though in some emergencies the subcutaneous introduction of blood did well, many cases, which were lost by simple subcutaneous infusion of blood or serum, he felt might have been saved by the more radical methods. The histories of such cases were related.

In hemophilia in late infancy and childhood, transfusion was uniformly successful in combating the hemorrhages even where large amounts of blood had been lost.

In a case of pernicious anemia, a very rare condition in childhood, 2 transfusions of 140 and 120 c.c. of citrated blood initiated an improvement and the child went on to recovery and was now 4 years of age and normal in every way. In this case the hemoglobin was reduced as low as 15 per cent. at one time and mounted to 44 and 34 per cent. after each transfusion respectively. The spleen in this case was enlarged and the question of its removal debated and rejected after frequent consultation.

Transfusion was useful in acute diseases with tendency to hemorrhage.

Acute and chronic leukemia were not permanently benefitted by transfusion, and purpuras of all varities were not improved as to the purpuric condition by the introduction of new blood into the system. Henoch's purpura was particularly rebellious to treatment. In several patients, who ran a low temperature with endocarditic crises, due to an infectious endocarditis, transfusion was employed without success. In these cases the hemoglobin index improved immediately after transfusion, but fell rapidly to the initial index, and the patient sank even more rapidly than one would expect even if transfusion had not been practiced.

There was one form of streptococcus invasion which, if intensively transfused and repeatedly, might so improve after the introduction of new blood and this was the form of blood sepsis which did not affect the heart itself. In one case of sinus thrombosis, resulting from ear infection, as many as 8 repeated transfusions were performed by the Lindemann method. These tided the patient over repeated crises and recovery ensued in spite of complications in the pleura and joints.

In certain septic infections, he had advised the removal of blood in order to make way for the introduction of new blood in large quantity, thus avoiding the danger of overloading the circulation.

In a few cases of post-influenzal nephritis, the writer had employed blood transfusion when the patient was fast sinking and the urine showed the presence of blood. The transfusion of whole blood in this case caused not only a cessation of bleeding but the nephritis recovered completely. On the other hand, many patients with the same affection were transfused without success; the physician waited too long.

There were a variety of conditions in infancy and childhood in which, if transfusion was performed in a rational way, it might be a life saving operation. He had no patience with the indiscriminate use of transfusion, nor with its use as a last resort. There should be a very definite idea or indication to the performance of transfusion if the whole method of therapy was not to be brought into disrepute.

THE ENERGY METABOLISM FROM BIRTH TO PUBERTY.

Dr. Fritz B. Talbot, of Boston, presented charts summarizing the results of experimental work carried on at the Nutritional Laboratory of the Carnegie Institution. He referred to the attempts made to determine the basal metabolism of the normal child which were presented before the Society several years ago, and which were undertaken because of the fact that they had no data concerning the basal metabolism of the normal child and hence when they were dealing with the abnormal child they had no basis for comparison.

The present study, which was but a preliminary report, was based on observations made on 108 boys and 78 girls from birth to puberty. As they perhaps remembered, the basal metabolism was the minimum amount of calories a baby could live on, leaving no margin for growth or exercise. One of the charts showed the average curve for the basal metabolism of 58 boys and 47 girls of about 10 kilos weight—that was the weight at one year of age. While there was some variation in individual curves, there was no essential difference between that of the boys and girls up to 1 year, the average basal metabolism being the same for both sexes. After this age the basal metabolism of the boys was found to be a little higher than that of the girls. If the curve for the basal metabolism of adults were added, it would be found that the basal metabolism of men was a little higher than that of women.

The typical line showed, that during the first 3 days of life, there was a loss of weight due to loss of meconium and to the fact that there was no food, as the breast milk did not come until the 3rd day. The caloric value of the food then increased rapidly and at the end of 1 month the baby was getting 500 calories a day on the average. The individual of course did not utilize all the food ingested, some being lost in the feces and in other ways. They had estimated that about 80 per cent. of the food administered was available. In their previous work, it had been shown that the basal metabolism was that of the baby when absolutely quiet; every time the baby moved it used up calories and therefore the increase over basal metabolism was due to muscular exercise.

In 1 instance it was shown that during 24 hours the increase over the basal metabolism due to exercise was 30 per cent.; in another instance it was found to be 20 per cent. They had taken 25 per cent. as the average amount of its food that the normal baby utilized in exercise in 24 hours.

It was shown that, at the age of 1 month, 31 per cent. of the food ingested went for growth; at 6 months 25 per cent.; at 9 months 21 per cent.— so that as a child grew older the amount of food utilized for growth was less and less. Naturally if a child was not getting sufficient food and a certain amount was required for basal metabolism and exercise, there would remain an insufficient amount for growth. If the child had indigestion or diarrhea, there was a loss of food in the feces and this meant that less was available for growth. In one instance it was shown that as much as 40 per cent. of the fat ingested was lost in the stools. Hence, if a baby had diarrhea or loss of appetite, it meant that the loss of food would be greater than the estimated 10 per cent. —the normal amount lost in the excreta.

Attention was also called to the nervous, overactive child who was never quiet and consumed an excessive amount of calories in muscular exercise and hence, even though getting sufficient food, did not have a normal amount of calories to provide for growth.

Dr. Talbot stated that the full report of this study would be published in the near future.

Discussion.—Dr. L. Emmett Holt, of New York, stated that this paper explained a great many of their common experiences, as, for instance, individual differences in children so far as their food requirements were concerned. They all knew that it was impossible to feed a baby according to its weight or its age, and that a great many factors must be taken into consideration before one could judge accurately how much food a child required. Dr. Talbot had put down the figures showing just how much value was to be attributed to each factor. This was the first time these things had been presented in a scientific way so that they could all see for themselves exactly what happened and why it happened.

The question of muscular activity in relation to weight increase was very important, not only in infants but in older children. A problem with which they were frequently confronted was that a child was not gaining properly in weight, and in such a child the important factor might be to reduce muscular activity. Some children might be designated as perpetual motion and it was very difficult to make them gain in weight unless their muscular activity could be reduced.

Another point was the amount of food lost in the stools. This had a very practical application when it came to children who were getting 3 times as much food as they could take care of and were having excessively large stools. This was a loss that might be overlooked unless a chemical examination of the stools was made.

Dr. Holt congratulated Dr. Talbot on having put these various factors on a mathematical basis and the Society on having had the opportunity to listen to this valuable contribution.

POST-INFLUENZAL ENCEPHALITIS.

Dr. Henry Heiman of New York presented a study of this condition based on 8 such cases from the pediatric service of Mount Sinai Hospital. After reviewing the history of this condition, he stated that the first term applied to this syndrome was "sleeping sickness." Such a nomenclature would confound the condition with trypanosomiasis. Other appellations had been suggested and in 1917, Economo employed the term "lethargic encephalitis," but this had been criticized by Lassoe as being illogical as the patient and not the encephalitis was lethargic. He proposed the term "epidemic encephalitis." The writer believed, from a study of the relations of this condition in influenza, that the most appropriate designation was post-influenzal encephalitis. One could not fail to be struck with the close association of this symptom-complex with epidemic influenza. The only periods during which it had been observed had been the years following the extensive epidemic.

From his observations the writer had been able to differentiate 3 main forms, depending on the severity and the most prominent symptoms. These might be grouped into (1) irritable, (2) lethargic and (3) lethargic with paralysis. The irritable type was characterized by marked restlessness, excitability, and almost continuous crying. In the lethargic form, the most prevalent feature, as the name implied, was a drowsy state. The facial features were expressionless, mask-like, resembling the Parkinson syndrome. There might be convulsions or twitchings of the face muscles. There was frequently moderate rigidity of the neck. Most of their cases fell into the third group of lethargy, with paralysis. In this type they found, in addition to the stuporous state, some form of paralysis and frequently convulsions. There might be an involvement of the extremities or cranial nerve palsies.

In their series of cases, the oldest child was 13½ years and the youngest 4 months. The cases were equally divided between the 2 sexes. In all of their cases there was a history of previous influenzal infection. In one child the nervous syndrome followed immediately, and in another, as long as 4 months had elapsed. The average was about 2 weeks. In 6 of the cases, the onset of the encephalitis was sudden; in 2 there was a progressive development. Convulsions were the first manifestations in 3 cases; stupor, in 4. Drowsiness and stupor continued as prominent symptoms throughout the course of the illness in 4 cases; irritability, in 3. Fever had played a small rôle in all the cases reported. The fundi were examined in all the cases of this series but showed nothing characteristic. Of 8 specimens of cerebrospinal fluid examined, only one case showed definite changes. There were 80 cells per c. c., 80 per cent. being lymphocytes. Albumin was present and there was a definite reaction to Fehling's. There were no other organisms. There were no uniform changes in the blood picture, though 6 of the cases showed a moderate leucocytosis, ranging from 9,000 to 13,000.

The prognosis was better than the alarming state of the patient would indicate. Thus far they had not lost any cases. In at least 2 cases, however, the mentality had been definitely affected.

There was no specific therapy. Their treatment had been symptomatic throughout. For the irritable type, mixed bromides and chloral were of some value. In the paralytic type, massage of the involved muscles was of distinct advantage. They had not found lumbar puncture of special benefit.

Dr. Isaac A. Abt, of Chicago called attention to the fact that all the cases of encephalitis they saw were not due to influenza. Encephalitis might follow pneumonia, measles, typhoid fever or whooping-cough. Encephalitis included a group of diseases as Dr. Koplik had pointed out. The disease was selective, affecting certain portions of the brain. There was a number of cases in which the anterior motor areas were affected and in some there was a one sided paralysis. The prognosis were good so far as life was concerned, but a number of those affected remained paralyzed.

THE CAUSE OF A "SPORADIC" CASE OF CEREBROSPINAL MENINGITIS.

Dr. Henry L. K. Shaw, of Albany, N. Y., presented this case as a contribution to the epidemiology of cerebrospinal meningitis. A 5 months old breast-fed infant, living on a farm, developed cerebrospinal meningitis. On account of the isolated location of the farm, it was possible to ascertain and examine every person who had come to the house for a week previous. There was no record of any previous cases in this locality. One of the visitors, an enlisted man, who had gone to France and returned to this country in January, was discharged from Camp Upton on January 27, 1919, and had fondled the baby on January 28. A few days later the baby was taken ill. The returned soldier said that to his knowledge he had never seen, been in contact with, or known of a case of meningitis in his regiment. He was found to be a meningococcus carrier. Nasal cultures from all the other persons who visited the farm were negative. The meningococci obtained from the soldier were agglutinated by the fluid from the spinal fluid of the baby and were also proven identical by cultural growth. A point of interest was that the organisms still persisted in this carrier on June 10. He had been under treatment by a nose and throat specialist and had used irrigations of all kinds, but the meningococci resisted all procedures. His plight was pitiable. The army refused to take him back. The War Risk Insurance Bureau, Public Health Service, and the Red Cross all claimed they had neither funds nor authority to reimburse him. He was in perfect health but was held in quarantine and was unable to support himself or his family.

Discussing so-called sporadic cases and those which had apparently been traced to fomites, Dr. Shaw expressed the opinion that such cases could always be traced back to a previous case, if full facts were obtainable. Lack of appreciation of modes of infection, both by the laity and the medical profession, was responsible for failure to obtain full facts. It was difficult to make the public and even members of the medical profession realize that persons, not things, were responsible for the transmission of communicable disease. Many instances of alleged fomites infection were doubtless cases of carrier infection. Persons, in whom the germs were growing, were much more likely to be the agents of infection than were objects on which the germs were dying. The writer cited the opinions of a number of observers all of whom agreed that the transmission of disease through the air and by fomites had been disproven; the present explanation was that communicable disease was transmitted only by means of infected persons, unrecognized cases and healthy carriers.

Epidemiologists claimed that an outbreak of communicable disease could be checked with prompt and strict isolation of the sick and early and diligent hunt for carriers, but that, after the disease had been established and carriers became numerous, isolation and quarantine were of little avail. In the case reported, they had been fortunate in being able to detect the carrier and to isolate both patient and carrier, and no further cases had developed. If this carrier had lived in a large city and had a number of nieces, nephews and admirers, it was not difficult to imagine a wider distribution of cases with a large number of unrecognized carriers. Isolation, quarantine and disinfection of the sick would not have controlled the situation.

As the disposition of carriers was very largely a public health measure, a questionnaire was sent to the various state departments of health, in order to ascertain their mode of procedure regarding carriers of meningitis. The answers which were quoted revealed very little uniformity in the isolation of patients and in dealing with carriers. There were no provisions for the detection of healthy carriers and the compulsory bacteriologic examinations of contacts. Public health legislation on this subject was imperative, if we are going to limit the spread of communicable disease. It was the duty of pediatricians to keep abreast of public health progress and to assist in educating our communities in the new order of things.

From the study of this case the writer felt justified in claiming that it was caused by contact with a healthy passive carrier, that sporadic cases were in reality untraced cases and that the human carrier was responsible for cases appearing either singly or in epidemics.

Dr. L. Emmett Holt, of New York, cited a case which paralleled Dr. Shaw's. In this instance a wealthy young man returned from the army several weeks after his wife had given birth to a baby. The wife developed cerebrospinal meningitis, typical in character. It was found that the husband was a carrier. He was advised to take a long sea voyage. This he did, but on his return several months later it was found that he was still a carrier. After treatment by a nose and throat specialist he was freed from the organisms.

Dr. Holt also urged the importance of recognizing that many thousands of returned soldiers were distributed through the community and that undoubtedly a number of them were carriers of disease and that, as a consequence, they were likely to see many of these cases cropping up. The problem was what to do with these individuals and what to do for them.

Dr. Henry Koplik, of New York, pointed out what a vast and hopeless problem the carriers of infectious diseases presented. He said it would be impossible to care for all carriers. He cited a case almost identical to the one reported by Dr. Shaw, occuring in a baby whose father was in France. No one had visited the child except a soldier, who returned, bringing letters from the father. Shortly afterward the child had cerebrospinal meningitis, confirmed by lumbar puncture. He had been careful not to tell the mother that he suspected the soldier of having been a carrier of the infection.

CEREBROSPINAL INVOLVEMENT IN HEREDITARY SYPHILIS.

Dr. P. C. Jeans, of St. Louis, presented this paper in which he stated that evidence showed that about 30 per cent. of syphilitic infants had changes in the cerebrospinal fluid of such a character and degree as to make the diagnosis of syphilitic involvement of the nervous system seem quite certain. There might or might not be associated clinical manifestations indicating neurosyphilis. Intravenous and intramuscular treatment would result, in most instances, in the disappearance of the abnormal findings both in the cerebrospinal fluid and in the blood.

Similarly, routine spinal puncture, in older children, having either latent or active syphilis, showed evidence of neurosyphilis in about 30 per cent. of those examined. Clinical signs of neurosyphilis might be present or absent. Prolonged intravenous or intramuscular treatment would eventually result in a negative blood Wassermann, while the cerebrospinal fluid might or might not continue to show changes indicating neurosyphilis. Intraspinal treatment would cause the disappearance of pathological changes in the spinal fluid when these had persisted.

Justice to their syphilitic patients demanded that the state of the nervous system, as indicated by the cerebrospinal fluid, be known in each case. Great injustice was done when the patient was discharged, after being treated to clinical recovery and negative blood reaction, without knowing the condition of the central nervous system as shown by the cerebrospinal fluid.

Discussion—Dr. W. McKim Marriott, of St. Louis, pointed out that these studies were of more than academic interest, because the knowledge was of value in influencing prognosis and treatment. Dr. Jeans had made careful observations on the spinal fluid after the administration of arsenic when mercury had not been given first. His experience was that the administration of arsenic, before mercury had been given, might result in a serious reaction, namely, the Herxheimer reaction. In order to prevent such a reaction, therapeutic treatment should first be given with mercury and later with arsenic. A further practical application of the results of Dr. Jeans' observations was, that if they watched the spinal fluid in cases that were apparently cured, after being treated in the usual way and after the blood had become negative, as shows by the Wassermann test, the spinal fluid might still be positive.

Dr. L. R. DeBuys, of New Orleans, warned against being too eager to exclude congenital lues in the presence of a negative blood Wassermann. He advised always examining the spinal fluid when congenital lues was suspected. He also thought it was well to get away from the intraspinal method of treating these cases. He called attention to the fact, that some days after the administration of salvarsan in adults, the spinal fluid would show the presence of arsenic, thus demonstrating the permeability of the choroid plexus.

A HEALTH STUDY IN A BOY'S SCHOOL.

Dr. Richard M. Smith, of Boston, reviewed the work thus far done in the care of the health of school children in reference to the detection and correction of physical defects, and the provision of proper food for the undernourished. He stated that in many schools the entire plan, as he had outlined it, had been in operation, and in nearly all schools some part of it. In only a few schools had there been any study of the health of the children which took into account all the factors in the child's life and their relation to one another. The public schools had been more progressive than the private schools in this matter. In fact, many private schools entirely neglected the question of health.

As pediatrists, whose chief responsibility had to do with the health of school children, there were certain matters concerning which he believed they should take definite action. There were certain minimum standards of health supervision to which every school child was entitled.

In the first place, every school child should be give a complete physical examination at least once a year and means provided for the correction of defects and the treatment of diseases found. At the same time, they should see to it that defects or diseases did not develop while the child was in school. It had been argued that it was impossible to undress school children for examination and that we must content ourselves with the imperfect results obtained from unsatisfactory methods. He did not believe that parents had any objections to an examination, provided they understood why the examination was made.

In the second place, proper qualifications for school nurses should be insisted upon. School nurses were really health instructors and they must be selected because of efficiency in that work, not because of any other reason.

In the third place, a better understanding and a closer cooperation should be brought about between school authorities and the family physician, and the practicing dentist. The differences usually arose because of a failure of understanding. Unity of action must be secured for the good of the child's health. If minimum standards for school children were established and taught, there would be no conflict of advice. This involved the introduction of the teaching of school hygiene in the medical schools—a development which was sure to come in time, and which they should endeavor to secure at once.

In the fourth place, they should continue their recent interest in the question of nutrition. It was not sufficient to weight and measure all children and then confine all their attention to those who proved to be underweight. This method gave no recognition to the equal importance of preventing malnutrition in those. who at the present time, might be of normal weight. To the end that school children might be kept in good nutritional condition, school lunches of the right kind should be provided, and some supervision given to the method in which the lunch was eaten.

In looking to the future extension of health supervision, there were additional features to which attention must be directed. First, there must be a general recognition of the importance of health. Our recent draft had shown that our present methods of safeguarding health did not produce satisfactory results. Health was just as necessary for efficiency in peace as in war. This principle was fundamental for further progress. Second, there must be a recognition among school authorities, both private and public, that the health of children was as important as scholarship and that education must not be acquired at the expense of health. Third, there was especial need of securing the cooperation of parents in protecting the health of their children. Parents were particularly careless in planning the activities of their children out of school hours, such as special lessons and parties. These activities must be planned in connection with school work, and not be added to that without reference to other matters. The school master and the parent and those interested in child welfare, with the advice of the physician, must act together and see that the child's life, as a whole, was lived so as to protect and not injure his health. Fourth, it was important that the pupils themselves should receive instruction regarding health. The teaching of health to pupils must eventually be in the hands of school authorities. This could be done only when the school authorities recognized the importance of health and after they had received from physicians information as to the proper things to teach. This made it necessary for them to be ready to submit courses of instruction for teaching health to children.

Dr. Smith then described the methods used in a particular school for safeguarding the health of the pupils. This school was Mr. Rivers' Open Air School for Boys, established in Boston in 1915. In this school from the beginning, health had been considered equal in importance to education. There was an advisory medical committee to whom the details of the curriculum were submitted in order that education and health might be considered in relation to each other. The work of the school was conducted entirely in open air class rooms. The food was approved by the medical members of the advisory committee. The children had rest periods each day. This was a definite part of the curriculum, and adapted to the varying needs of the boys at different ages. Each boy's program was explained in detail to his parents and the importance of planning home-time in relation to this program was emphasized. The school sent the boy to his family physician for advice, when the progress in school or the health of the boy was suffering from a physical condition needing correction. There was a school matron whose sole duty it was to look after the health of the children, under the supervision of the head of the school and with the advice of the medical committee. Every pupil, on admission to the school, brought a medical chart filled out by his parents or the family physician. This was considered carefully in planning his school work, his rest periods, his diet and any special supervision that was necessary. The hours at school were divided into 4 groups—study, inactivity, activity and occupation. So far as the school was concerned, this could be carried out accurately. For its complete application, it required the willingness of the parent to cooperate. From the writer's study of boys in school over a period of several years, he had arived at standard percentages to be given to study, inactivity and activity at different ages from 6 to 15 years.

Other charts were presented showing the reason of absence from school and the progress of undernourished children, under careful supervision, both as to their improved physical condition and their progress in scholarship.

Dr. Samuel McC. Hamill, of Philadelphia, congratulated Dr. Smith on being the first to emphasize the need of medical supervision in a boys' school. He said he had had opportunity to come into contact with boarding schools and had been dumfounded at the neglect of medical supervision. He felt sure that Dr. Smith's paper would have a great influence in awakening school authorities as to the need of medical supervision. He called attention to the studies of Gebhardt in regard to food intake, which showed that the average food intake of the boys investigated was 5,000 calories. Such studies were of value in calling attention to the fact that it was not only the boy who was undernourished that needed attention, but the boy who was consuming an amount of food that he was utterly unable to dispose of as well. There was an opportunity in a boys' school to make some observations with reference to what constituted a normal food intake for 24 hours, in boys of school age.

Dr. L. E. LaFétra, of New York, congratulated Dr. Smith on his plan of having regular periods of activity and inactivity for the individual boys. One factor of importance, which perhaps Dr. Smith had not emphasized sufficiently, was that of having periods of rest between study periods. Efficiency engineers found that a man made more errors when he was fatigued and that a greater amount of work could be accomplished by the introduction of brief rest periods. The degree of fatigue, the number of obsences, and the labor turn-over were greatly decreased by the introduction of a 5 or 10 minute rest period every 45 or 50 minutes. The same principle should be applied to the growing child. Another factor of importance, not so much in the private as in the public schools, was that the length of time allowed for lunch was altogether insufficient. The child was put on a nervous strain lest he might not get back to school in time and hence did not take time to chew his food and eat his lunch comfortably. The lunch period should be long enough to permit the child to eat his lunch comfortably and to allow a period of repose before going back to school.

Dr. Isaac A. Abt, of Chicago, said that if teachers knew more about health and doctors knew more about education, we would have better results. Too many doctors went into the work of school inspection unprepared. They should be taught hygiene before leaving the medical schools or before going into the public schools as medical inspectors. He thought this matter of school inspection had a brilliant future but that at present it was a failure. Medical inspection in the schools should be left to the best men in the community and not to the younger men, who knew little or nothing about it.

Dr. H. L. K. Shaw, of Albany, N. Y., emphasized the points brought out in the discussion, and agreed that one of the reasons medical inspection in the schools was a failure to a certain degree was due to their lack of knowledge and indifference to the subject. The young men were being sent out from the medical colleges without sufficient knowledge of pediatrics, of infant mortality, and allied subjects. During the last few years the term "medical school inspection" was being superseded by the term "medical school health supervision." They had been fortunate in New York State in having an educator like Dr. Finnegan. He had planned a course of health instruction for the schools, with a certain course for each grade. The teachers were first instructed and then gave this instruction to their classes. Dr. Finnegan did not approve of medical school inspection as they had had it.

Dr. L. Emmett Holt, of New York, said that they all realized the situation but the question before them was that of the remedy. The public could only be awakened to the need of improvement through the education of public opinion, and that was what this Society should make an effort to do. It was not only possible, but absolutely necessary, that there should be a revision of the work being done in the public schools.

In closing Dr. Smith said he did not want to give the impression that all the parents cooperated with them, for they had come in contact with a few who did not. The doctor and the educator looked at this matter from different angles and it was necessary that they should come together. It was also necessary to get the parent interested in the health of the child. The parents were interested in the marks the child got at school, but it was surprising how few parents were interested in how the marks affected the health of the child.

THE PREDOMINANCE OF SEBORRHEIC ECZEMA IN EARLY LIFE.

Dr. Thomas S. Southworth, of New York, stated that the recent trend of pediatric literature appeared to be that of considering the majority of infantile eczemas due to dietetic or other internal causes, and the value of the excellent work done in this direction, both from an etiological and a therapeutic standpoint, was fully acknowledged by the writer. Nevertheless it would appear that the part played by seborrhea had been overlooked and had failed to receive the recognition it deserved.

The writer's observation had been that a predominance of the cases of eczema presenting themselves in the ordinary routine of pediatric practice were associated with seborrhea, many of which were mild and would never reach the dermatological specialist. The prevalence of milder types led the writer to examine the severe eczemas with a view of determining the presence of seborrheic manifestations, and he had not been surprised to find them frequently present. The clue to such basic causation was found about the ears as well as upon the scalp. To trace the seborrheic factor it was necessary to begin with the milder forms upon the face and body, whose identity might be established by finding seborrhea upon the scalp and in the characteristic location in the folds above and below the ears. In such cases, if the present condition of the scalp did not permit of an exact diagnosis, inquiry would usually elicit the information that the "milk crust or cradle cap" persisted unusually long and was eliminated with some difficulty.

Seborrhea of the scalp it was unnecessary to describe, but the ear signs might vary from a mere adherent dry exfoliation to a moist and exuding surface where two surfaces were in contact. When marked and with some severe eczema, the moist surface might invade considerable portions of the sulcus behind the ear.

There was something significant also in the predilection of such eczemas for fat babies on breast milks, rich in fats, and for bottle babies, suffering from disturbed digestion caused by a relatively excessive intake of fat. Towle and Talbot, in their description of cases of eczema associated with a faulty digestion of fat, had noted the tendency of the exudative eruption to remain limited to the regions of the head for an appreciable length of time. There seemed to be some local predisposition to determine its localization. In nearly every case of marked facial eczema some characteristic lesion would be found, if sought for, above or below the ear. No attention had heretofore been called to this association, and it had generally been overlooked.

Some explanation also was due us for the fact that such facial eczemas tended to involve the hairy scalp rather than the neck and chest. Here the acceptance of a seborrheic predisposition appeared particularly reasonable. While MacKee had wisely said that the diagnosis of an internal cause for eczema should not be made until all external causes had been eliminated, there was no real conflict between the two since internal causes undoubtedly predisposed the skin to succumb to external factors.

The writer emphasized the possibilities of seborrhea in furnishing a starting point of eczema. The recognition of a seborrheic basic for a lesion by no means excluded the possibility of other micrococcic invasion. On the contrary it was probable that a majority of the more typical facial eczemas of infancy were associated with a mixed infection.

Oxide of zinc ointment, so helpful in other types, was, as a rule, useless by itself in seborrheic cases of even the simplest form. It had been his experience that the bland and soothing ointments of the zinc oxide sort were unavailing until to them were added ammoniated mercury or tar, or resorcin, to destroy the microorganisms present. The part played by diet, both in the causation and cure of facial eczemas of infancy were recognized by all and this dietetic factor must be differentiated and corrected before the larger number would yield to treatment.

CONGENITAL DISSEMINATED ATELECTASIS WITH X-RAY FINDINGS.

Dr. John Ruhrah, of Baltimore, said his reason for making this brief report was that, in the experience of at least 3 of the x-ray establishments in Baltimore, not a single instance of this condition had been discovered.

The patient was a girl, born on July 27, 1917, weighing 6 pounds, 7 ounces at birth. She increased up to 8 pounds and then lost weight to 7½ pounds, at which it remained. She was nursed 2 months and then weaned and placed on a large number of different milk formulae and preparations. When first seen on November 15, 1917, the child had already passed through the hands of 4 doctors. The case had been regarded as one of feeding, but, on examination, showed a certain amount of cyanosis which became very marked on crying. There was marked cyanosis and clubbing of the tips of the fingers and toes, a curious duskiness of the skin of the abdomen, and enlarged superficial veins running up the chest. The most striking thing, however, was the rapid respiration, which rarely was under 50 a minute and many times 75 or 80 or more. The heart was normal as far as could be determined and nothing could be made out of the lung. The child, with proper care and attention to feeding, gradually gained, and, in June, 1918, weighed about 11½ pounds and was breathing somewhat more slowly. The x-ray plate showed the disseminated patches of unexpanded lung. At present the child weighs 25 pounds and is apparently normal.

A CASE OF SCORBUTIC HEMATURIA.

Dr. Percival J. Eaton, of Pittsburgh, made this report. He said that on March 19, 1919, he was called to see a case of suspected stone in the bladder. The child had had a hematuria for a couple of weeks, and had been seen by another physician. The history was not at all complete, but was that of a rather poorly nourished child, fed for a long time on patent foods, and then on cooked food to some extent, but never on fresh raw food. It had no scorbutic symptoms in so far as its gums were concerned, though they were unduly red. It was not particularly sore on being handled. Its condition seemed to point more towards scurvy than to calculus, especially as it had no pain, and more especially in that the urine showed nothing abnormal except bright blood. Fresh, raw milk, beef juice and orange juice were prescribed. The use of the sound was not resorted to until at least antiscorbutic treatment had been given a fair opportunity. The writer later received a call that the hematuria disappeared rapidly under the advised treatment and that the child made a rapid and complete recovery.

As this was the second case of scorbutic hematuria which the writer had seen, he was much interested to have his diagnosis confirmed. He was too busy then to look up the literature in the short time at his disposal, but such cases are rare he believed.

A CASE OF CALCULUS.

Dr. Percival J. Eaton, of Pittsburgh, reported this case of a boy, 6 years old, who when first seen gave a history of incontinence by day as well as by night. He had had, a little earlier, a mild attack of influenza, of 2 or 3 weeks duration, which seemed to have cleared up pretty well. When first seen there was no pain on urination. A recent circumcision had not relieved incontinence. Previous medical history had no bearing on the child's present condition. Dry diet, and the elevation of foot of bed at night had no effect, and soon came pain on urination. The pain was paroxysmal. The urine showed nothing pathologic.

On admission to the hospital the urine was straw colored, turbid, slightly acid, showed a faint trace of albumin and glucose was negative. A few leucocytes and epithelial cells, and many bacteria made up the sediment. Specific gravity was 1010-1020. Pain spasms irregular; paroxysms from manipulation of bladder area. Codein was necessary at times to alleviate pain. Two x-rays showed a good sized, oval stone in the bladder. Its presence was confirmed by the sound.

An immediate operation was performed. A suprapubic incision was made into the prevesical region, the peritone was pushed away, and an incision made in the bladder. An 18.25 gram stone was extracted. Boy made an uneventful recovery.

The points of interest were: 1. Incontinence of the usual type, probably following the influenza. 2. Absence of pain at first. 3. Paroxysmal pain becoming more and more severe. 4. The size of the stone, with no apparent reason for its occurrence, i. e. no history of having lived where the water was hard—no history indeed along any line. 5. The probable long time of its occupation of the bladder without symptoms.

A CASE OF ANOMALY OF THE DIAPHRAGM WITH A GASTRIC AND INTESTINAL OBSTRUCTION.

Dr. Laurence R. DeBuys, of New Orleans, reported this case which occurred in a child about 4 months of age. who was admitted to the hospital after an illness of 2 days. The history showed that the patient had been a perfectly well baby up to the age of 3 months, when she had a peculiar attack of colic with twisting and straining. This "spell" was promptly relieved by the administration of milk of magnesia and an enema, after which the patient improved and appeared normal. Another attack occurred between the first one and the time she was admitted. It was a little more pronounced than the first. The same treatment was employed, and the patient recovered from this attack also.

Two days before admission, the baby appeared to have a "weak spell," wanted to vomit, and could not, and everything that was swallowed came up immediately. The symptoms became worse and enemata brought back nothing. She became progressively worse and was admitted in a desperate condition. When the writer saw her for the first time, she was acutely ill with rapid respiration, 78 per minute, and a pulse of 150 to 160 per minute. Her temperature as 103° F. and rapidly rose to 140° F. On inspection the chest showed less movement on the left side, both anteriorly and posteriorly, and was apparently not as full as on the right side. Resiliency was absent on the left side, and the notes elicited were different. The heart was displaced to the right and its apex beat in the median line on its normal level. The abdomen was soft and flat and presented a tumor in the epigastric and left hypochondriac region, lying transversely and about the roundness of a banana, seeming to be from 3 to 4 inches long and distinct from the lower border of the ribs. It was immovable. The blood examination showed a leucocyte count of 29,500, with an 88 per cent. polymorphonuclear neutrophile cell count. Only a small quantity of the enema could be given, as the baby would expel it promptly and at regular intervals, so the time was judged and, just before the enema was expelled, a radiograph was taken which clearly showed an obstruction. The radiograph suggested an intussusception. The thorax showed a decided shadow of the entire left side.

An operation was performed for the relief of the obstruction and diaphragmatic hernia was demonstrated. At operation, the intestines were found empty, contracted, and of normal color; the peritoneum was glistening and not congested; no omentum was visible. On palpating the tumor, there was a sudden gush of blood-tinged watery fluid through the mouth and nose; at this point there was a cessation of breathing and all attempts at resuscitation were futile. The incision was then prolonged up to the left of the umbilicus. The great omentum and transverse colon were not visible. The spleen was now seen lying on top of the tumor, with its long axis transverse to the abdomen, and its convex surface lying against the diaphragm, the lower end just under the left costal arch.

A complete exploration of the upper abdomen showed the tumor attached to the hilum of the liver; the transverse colon was not in sight. Digital examination revealed a hiatus in the diaphragm, under the tumor, which was distinctly felt to be continuous with another fluid mass in the thorax. On opening the left chest, the fundus and the greater part of the body of the stomach, the transverse colon and great omentum were found in the thoracic cavity. No pleural sac was found over these viscera. The diaphragm was divided down to the hiatus. The tumor consisted of the pyloric portion of the stomach twisted on its axis at the hiatus behind the diaphragm, so that the greater curvature with the attachment of the gastrosplenic omentum lay in contact with the inferior surface of the diaphragm, under the left costal arch. Thus the pyloric portion of the stomach was strangulated and the pylorus closed by torsion, while the portion of the stomach in the chest cavity was not strangulated. The transverse colon and the omentum had slipped up behind the stomach. The left lung was collapsed and showed no evidence of pneumonia. The heart was displaced to the right, so that the apex lay on the spinal column at about the fourth chondro-sternal junction. The wound was closed with 2 layers of continuous catgut sutures. A diagnosis was made of diaphragmatic hernia containing the stomach, transverse colon, and great omentum. At a second autopsy the left suprarenal body was found to be enlarged and hemorrhagic. At the posterior left half of the diaphragm there was no attachment; there was a hard cord bridging over this area in dome-like manner. The stomach appeared to be bent upon itself at a point from above downward, beginning at the esophageal end anteriorly. There was another twist that appeared anteriorly to the pyloric orifice. The twisting in these two portions had cut off certain blood supplies, which resulted in gangrenous necrosis of the stomach wall. The transverse mesocolon and the gastrosplenic omentum also showed definite areas of gangrene.

Among points of interest to which attention was called were: the absence of tenesmus with bloody stools in an obstruction, involving the descending colon, which would require the exclusion of the diagnosis of intussusception, and the radiograph without any evidence of air in the thorax, especially with an intinal hernia into it. This hernia belonged to the false variety of the congenital type of diaphragmatic hernia, being differentiated from the true variety by not having a sac. In this instance there existed 2 conditions not mentioned in the various classifications of diaphragmatic hernia, namely, strangulation and palpable abdominal tumor.

A CASE OF TRICHINIASIS.

Dr. Howard Childs Carpenter, of Philadelphia, reported this case which occurred in a boy of 13 years of age, taken suddenly sick with diarrhea, vomiting, and pain in the epigastrium. Eight days later, pains became general all over the body, with swelling of the muscles and pain on pressure or on motion. The child had been sick for 3 months at the time he came under the writer's care, and had been treated for various conditions, such as muscular rheumatism, growing pains, etc. Examination showed the muscles swollen, tender, firmer than normal, and hard infiltrations were felt in the masseters, biceps, triceps and gastrocnemius. The history which was obtained revealed the fact that the onset or the illness occurred after eating raw sausage. Several other members of the family, who were ill following the eating of this pork, still showed high eosinophile counts, 3 months after the infection. Because of the severity of the disease in this boy, the pork which he ate must have been heavily infested. One of the reasons frequently given why children have milder attacks is because of their peculiar susceptibility to diarrhea which tends to eliminate many of the intestinal trichinae. From the history of this patient and of other infected children in this family epidemic, the statement that the disease was mild in children was not borne out, as 3 of the children had been extremely ill. The differential diagnosis had to be made from nephritis, typhoid fever, meningitis, rheumatism, influenza, bronchopneumonia, and pleurisy. A point on making the diagnosis from nephritis was that the edema, which was present in trichinosis was not seen in the scrotum or labia. The eosinophilia, which was so important in making the diagnosis, might persist for months after the infection. The eosinophiles usually numbered from 10 to 35 per cent. This diagnostic aid was also available early in the disease, as an eosinophilia had been reported about the time the young parasites entered into the muscles. Other parasitic conditions were excluded by failure in repeated attempts to find the ova of any intestinal parasite in the stools, and the absence of any parasitic skin infections. It was interesting to note that this child, 3 months after the infection, still had a decided increase in his leucocytes (16,000) and still had a marked eosinophilia (15%). The writer believes that not a few cases of so-called muscular rheumatism were really chronic trichiniasis. Trichiniasis should not be overlooked in this delicatessen age, when mother, on her way home from the club, all too frequently stops and purchases bologna sausage for the family's supper. The prognosis was uncertain at first, but is usually good after the 7th week. The mortality varies widely, being given by different observers as varying from 6 to 22 per cent. The prognosis of the patient, here reported, was good as to life, but it would undoubtedly be months before he could be brought back to normal health, as far as his general nutrition was concerned. There was no specific treatment for cases seen after the migration of the embryos. Salvarsan had been tried with no effect. Serum from convalescent animals had no curative value. The writer emphasized the importance of making microscopical examinations for trichinae at autopsies in our children's hospitals.

TWO CASES OF PYELITIS AND A CASE OF SUPPRESSION OF URINE FOR FOUR DAYS.

Dr. Rowland G. Freeman, of New York, reported the case of a female baby of about 9 months of age, who, after doing well, suddenly developed a fever of remitting and irregular character, which immediately suggested pyelitis, and an examination of the urine showed a moderate number of leucocytes.

The child was put on alkaline treatment, consisting of the hourly administration of 2 grains of bicarbonate of soda. As the dose was increased, the amount of pus in the urine increased markedly. This occurred with no remission of the temperature and induced the writer to discontinue the use of alkalies and try hexamethylenamin. During the 24 hours that treatment was stopped, the temperature was lower and the number of white cells in the urine was reduced from 200 to 50 on a D field. Hexamethylenamin was then administered in daily increasing doses beginning with 6 grains the first day, when the urine showed only 8 white blood cells to a D field, but there occurred on that day an increase of a degree and a half in the maximum temperature. With no treatment the child's temperature reached 102° F.; with 6 grains of hexamethylenamin it went up to 103½° F., and with 10 grains it reached 104 2/5° F. The leucocytes in the urine at the same time gradually increased to 150 in a D field, and, as the baby seemed much worse, treatment was stopped on October 7. On the following day the temperature reached 103° F. and 3 days later was normal. The urine, however, continued to show some 200 white blood cells to a D field. The child never had any further temperature and no more specimens of urine were sent for examination.

Two months later it occurred to the writer that the last specimen of urine still showed leucocytes. The urine was again examined and it was found that pyelitis was still present, although the child had seemed perfectly well in the meantime.

The alkaline treatment was then undertaken but without clearing the urine. Then hexamethylenamin was given alone and with benzoic acid and dilute hydrochloric acid, to acidify the urine, and finally large doses of alkalies were again given. After one month of treatment, the urine again became sterile and on a pint of Kalak water daily and 15 grains of bicarbonate of soda every hour day and night, had remained sterile.

This case was of particular interest because, while the child had constitutional symptoms from the pyelitis, each effort to cure the child, whether by the alkaline treatment or by hexamethylenamin, seemed to make the condition worse both in respect to the fever and the number of leucocytes in the urine. Within 3 days of the cessation of treatment, the temperature became normal and the child apparently recovered, although it was left with pyelitis without constitutional symptoms. It was finally cured and, at this later stage, neither large doses of bicarbonate with the addition of Kalak water, nor the large doses of hexamethylenamin caused any apparent disturbance of the child's health.

The second case of pyelitis was in a frail child who weighed only 5 pounds at birth but who did well until the latter part of the first year, when she had a colitis followed by a typical picture of the intestinal infantilism of Herter. When something over a year old, the child had an attack of colitis. The child then did well until 4 years later when the mother reported that the child was not sleeping well and seemed tired. Examination of the urine showed a considerable amount of pus. In this case, large doses of alkali failed to cure and hexamethylenamin caused large numbers of red blood cells in the urine. The mother became discouraged and withdrew the child from treatment. Two years later the child was brought to the writer on account of an injury to the face from a fall, and an examination of the urine still showed the presence of pus. The mother was then told that it was very necessary to cure this condition, if possible. The child was seen only 5 times and was again taken away. This was in March, 1916, and nothing further was heard of the child until September, 1917, when the mother reported that during this period the urine was smoky looking and contained blood It contained a large quantity of albumin The child had no convulsions but a blood pressure of 220. With bowel washings, laxatives, counter irritions over the kidneys, and very small doses of hexamethylenamin, the urine became clear but the child's general condition did not improve and she died a week later. This case was of interest as showing the importance of curing, if possible, every case of pyelitis, whether associated with constitutional symptoms or not, as well as the necessity for frequent examinations of the urine in order to detect such cases of pyelitis when present without constitutional symptoms.

The third case was that of a boy, 3 years of age, who, last September, while in the country, had an attack of colitis for several days and then on September 4, passed very little water. A very small specimen of urine was sent to the State Laboratory at Albany where it was reported to contain albumin and casts. On September 5, no water at all was passed. On September 6, no water was passed. On September 7, the edema was considerably increased and there was absolutely no passage of water. Again on September 8, no water was passed and the edema continued to increase. During this period, the family were assured that the child would pass urine soon, that he would probably recover, and that, when urine was passed, it would contain a considerable amount of blood which would continue for several days.

At about midnight, on September 8, the child passed urine, and in the next 2 hours passed from 1½ to 2 quarts. This urine was a little cloudy, showed a little sediment and on examination, by cold nitric acid and heat, showed no albumin, blood, or casts. From that time, the boy gradually improved and entirely recovered. This case seemed especially interesting, not on account of the long period of suppression, because other cases of longer suppression had been reported, Dr. Northrup having reported one that continued for 5 days, but because the suppression was not associated with inflammation of the kidney but was probably congestion or, at least, complete suppression of function.

A FEW ROENTGENOGRAMS DEMONSTRATING GASTROINTESTINAL ABNORMALITIES.

Dr. Charles Gilmore Kerley, of New York, gave this exhibition of lantern slides, which showed various abnormal conditions of the intestinal tract, such as dilated colons, elongated and sacculated sigmoids, acute angulations, etc. Most of these patients complained of chronic constipation; some of them of recurrent vomiting, in addition; others developed diarrhea, this occurring in a certain proportion of cases of elongated, displaced and sacculated sigmoid. A number of slides were shown illustrating the conditions in pylorospasm, especially with reference to the emptying time of the stomach. Where there was an elongated and sacculated sigmoid, the emptying time of the stomach was always slow. There seemed to be an association between the emptying time of the stomach and that of the large intestine. In cases of chronic, obstinate constipation, an x-ray might frequently show the cause of the trouble. It was also an aid in getting the cooperation of the parent in carrying out the treatment over a prolonged period.

Discussion—Dr. H. M. McClanahan, of Omaha, said that since Dr. Kerley presented a paper on this subject several years ago, he had been having x-ray pictures taken in cases of obstinate constipation and intestinal disturbance and he had found 2 cases with sacculated, sigmoid flexures. He treated them by the injection of olive oil, massage, and small enemata. The series of symptoms revealed in these cases could only be unraveled by means of the x-ray.

Dr. DeWitt H. Sherman, of Buffalo, N. Y., spoke of the relation of stenosis to dilation of the stomach. The greater the degree of stenosis, the greater would be the dilatation of the stomach. All these cases of Dr. Kerley showed dilation of the stomach.

Dr. Godfrey R. Pisek, of New York, recommended in the treatment of patients having dilatation of the colon, the use of mineral oils and the reduction of carbohydrates in the diet.

Dr. Kerley stated that in studying these cases very many x-rays were taken, sometimes as many as 15, 20 or 30, so as to find out the emptying time of the stomach and to follow the passage of the bismuth meal through the bowel.

With reference to the periodic vomiting, it was not unusual to find that these patients had been treated for acidosis when they had dilatation and ptosis of the stomach. Some of these children had a constant residue in the stomach, and every 2, 4, or 6 weeks, this caused an explosion, and that had given rise to the error in diagnosis. These children did not have changes in the blood and they did not have acidosis.

This type of children, with poor appetites, responded favorably if the interval between meals was lengthened, giving the meals at 7 in the morning, at 1 in the afternoon and at 7 in the evening.

ACROCEPHALY WITH DEFORMITIES OF THE EXTREMITIES.

Dr. Edwards A. Park and Dr. G. F. Powers, of Baltimore, presented this paper, which was read by Dr. Park. They stated that, in 1908, Apert described a child who was the subject of acrocephaly and syndactylism, collected 8 other cases and put forward the combination as a clinical entity under the title of "acrocephaly-syndactylism." Since that time, 2 other cases of a similar nature had been reported. The writers had been able to collect from the literature more than 21 cases.

The clinical picture was very striking and not easily forgotten. The syndactylism did not differ, however, from the syndactylism occurring without malformation of the head, and the cranical deformity did not differ from that in acrocephaly, uncomplicated by syndactylism. All the writers on this subject discussed at considerable length the nature of the malformations of the skull and agreed that it was due to premature syntoses of the sutures. No writer, however, seemed to have considered the malformations of the hands and feet.

Several writers had sought to correlate the malformation of the skull and extremities as being both due to hereditary syphilis or amniotic adhesions; others had left the malformations of the head undetermined, but had explained the malformations of the extremities as being secondary to the malformations of the head, either as a result of the injury of a center situated in the base of the skull or contiguous portion of the brain governing the growth of the extremities or to interference with the normal development of the hypophysis.

The writers of this paper did not believe that the cranial deformity in acrocephaly was produced by premature synostosis of the cranial bones or that the malformation of the extremities could possibly be regarded as secondary to the malformations of the skull. They brought forward embryological evidence indicating an origin altogether antedating ossification. It was not generally appreciated that malformations of the extremities, other than syndactylism, not infrequently occurred in the subjects of acrocephaly. In other words, acrocephaly tended to have in association other skeletal defects and no such clinical antity as "acrocephaly-syndactylism" existed.

THE INCIDENCE AND SIGNIFICANCE OF THE RHEUMATIC NODULES IN CHILDREN.

Dr. Joseph Brennemann, of Chicago, said that the rheumatic nodules, that received so much attention from British writers on rheumatism in children, were almost universally considered a rare condition in this country. As a result of his own observations, he believed that they were just as frequent in this country as they were in England in an equal number of similar cases of rheumatism. The chief object of the paper was to stimulate an interest in the subject so that widely distributed observers might settle the question of whether these nodules were a definite quantitative accompaniment of rheumatism or whether they had a very selective geographical habitat. He gave a detailed description of the morphology and distribution of the nodules and discussed their significance. They practically never occurred in rheumatism uncomplicated by endocarditis or pericarditis. They were relatively rare in mild cases of rheumatism or chorea, with cardiac complications, but occurred with great regularity and usually very abundantly in chronic or recurrent and active endocarditis, especially in those cases that for weeks and months swayed between life and death, not alone because of a broken compensation, but even more because of a smouldering, uncontrollable infection that ever and anon lighted up again. Inasmuch as rheumatic nodules were pathognomonic of rheumatism with carditis, they were often of considerable diagnostic value. A new and abundant crop also had often an ominous significance in showing that a new and serious cardiac invasion had taken place. Rheumatic nodules, unless very carefully looked for were apt to be overlooked. The author believed that careful search would reveal them much more often than was commonly thought and that the only reason they had attracted more attention in England that in this country was because they had more and severer rheumatism there than here.

OSTEOGENESIS IMPERFECTA-CONGENITA.

Dr. H. M. McClanahan and Dr. W. W. Willard, of Omaha, presented this report which was read by Dr. McClanahan. He stated that the condition was first described by Vorlik in 1849, and up to 1906, 140 cases had been reported. Lovett and Nichols, after a study of these cases, concluded that only 14 of them were true cases of osteogenesis imperfecta congenita. Two types of the condition were recognized, namely, osteogenesis imperfecta—congenita and osteogenesis imperfecta-tarda. It was a rare systematic disease, characterized by imperfect bone development, numerous fractures and excessive callus formation. After reviewing the theories in reference to the bone formation in this condition, Dr. McClanahan said that whatever the theory, the fact was, that bone formation from periosteum remained in a primary fibrous state. The study of the bone in this case showed evidences that the osteoblasts rising from a fibrous bone marrow, because of insufficient nourishment or some toxic influence, did not develop properly but remained polygonal and later underwent metaplasia into osteoclasts.

The case reported was that of a male child, 3 months old in whom the deformity was apparent at birth, when several fractures were present, including fractures of the forearm and thighs and legs. The head was large and soft. On admission the child lay on a cot with its thighs flexed on its body, seldom moving unless disturbed. The liver and spleen were normal. The ribs were soft and pliable. Masses of callus could be felt in the shafts of the arms, thighs and legs. They had felt like a membranous bag with small islands of bone here and there. The mother was certain the baby had grown. It had nursed readily. The bowels were regular and of yellow color. The urine was free. The Wasserman was negative. The von Pirquet tuberculin test was negative. The specific gravity of the urine was 1,008; albumin negative; diacetic acid negative; acetone, negative; indican positive, and macroscopic examination was negative. The blood examination showed red blood corpuscles, 3,640,000; leukocytes, 18,-700; hemoglobin, 70; polymorphonuclears, 56 per cent; lymphocytes, 40; eosinophiles, 2 and special forms, 2. The baby remained in the hospital from October 1 to November 16, 1918. During its stay in the hospital, the temperature varied from 103° to 105°F., and respirations from 60 to 90. The legs were constantly flexed and the arms were splinted at right angles to the body. No attempt was made to splint the legs. Examination of the chest, a few days before death, revealed fine rales over the posterior chest with small areas of dullness on percussion. During the last 12 hours of life, there was a constant expiratory grunt. Death occurred from exhaustion on November 18. As far as the writer could ascertain this was the youngest case with a fatal issue which had been reported in which a careful histological study was made. The conclusions of Dr. Willard agreed very closely with those recorded by Nicholas upon an infant dying at the age of 10 months. The histological and postmortem findings were recorded.

CARE AND TREATMENT OF WHOOPING-COUGH PATIENTS.

Dr. Joseph E. Winters of New York said that in the last five or six years, 1911-1915, whooping-cough caused 85 per cent. more deaths than scarlet fever. In 1916, it caused almost as many deaths as scarlet fever and typhoid fever combined, both in New York City and New York State. In 1917, it caused almost twice as many deaths as scarlet fever. Three-fourths of the deaths from whooping-cough occurred in children under one year of age. The mortality from whooping-cough was 50 per cent. higher in the first year of life than in the second. It caused more deaths during the first year of life than any other disease. The younger the child the greater the susceptibility. Extreme susceptibility and high mortality made prevention imperative. Whooping-cough was carried in the clothing infected by the whooping-cough patient. In the first year of life, whooping-cough was carried to the infant by responsible adults in infected and soiled clothing. Carelessness of attendants disseminated it. Prevention in children was permanent prevention as immunity was attained at about the tenth year and was practically assured after puberty. In adults, supposed to have whooping-cough, the condition has usually been cured by purgation and the cough has been shown to be due to a digestive reflex cough. After the tenth year of life, the diagnosis of whooping-cough should not be made until the digestive reflex cough has been eliminated. Whooping-cough does not kill; it is the complications that kill. Whooping-cough does not cause complications; they are superinduced. The purpose of treatment is to obviate complications. Two-thirds of whooping-cough deaths are due to bronchopneumonia. Other complications are diarrhea, vomiting, marasmus, and meningitis. The respiratory complications occur in winter, the others in summer. In winter, the whooping-cough patient must have a summer temperature. The patient should be kept indoors and at 65° F., with fresh air but no draft. The bedroom must not be cooler than 65° F. Variations in temperature induce repeated coughing attacks and complications. Codein and bromides may be given. Some children after whooping-cough are extremely susceptible to repeated attacks of bronchitis. Whooping-cough also predisposes to tuberculosis.

Discussion—Dr. Samuel S. Adams of Washington, D. C., said that a subject as important as this should not go without discussion. The paper contained statements which he did not know that all could accept, as they were at variance with what many of them believed and practiced.

Some years ago they had had a symposium on whooping-cough before the Society. Men reported having treated whooping-cough in different climates; some at the seashore, some in the mountains, some in the Southern, and some in the Central States. The consensus of opinion was that the child with whooping-cough should have good food, fresh air, and good hygienic conditions, and should then be left alone so far as treatment was concerned. The men were agreed that no general principles of treatment could be established.

The method of spreading the infection laid down by the writer of the paper was unique. He did not know that they could accept the statement that the infection was carried to the child in clothing. He could conceive that if a child with whooping-cough coughed and vomited on the clothing of the parent or attendant and then a susceptible child came in contact with that clothing that it might contract the disease, but he felt that there must, as a rule, be personal contact in order to convey the contagion.

As to the treatment of whooping-cough with vaccines, a variety of opinions were found in the literature. He thought the vaccines had no effect either in preventing the disease or in controlling the paroxysms. Some children got along well without much treatment, while others required nerve sedatives.

A digestive cough in adults should give no trouble so far as the differential diagnosis was concerned. In laryngismus stridulus, a mistake might possibly be made, but certainly there was no reason for making a mistake in the differential diagnosis between a digestive reflex cough and the paroxysmal cough of whooping-cough.

DO CALORIES MEASURE THE TRUE VALUE OF FOODS?

Dr. Henry Dwight Chapin of New York stated that the caloric method of feeding was based on the assumption that nutrition processes depended solely upon the oxidation of food and that heat, given off as the result of oxidation, was the measure of the value of food. In practice, the tendency was to keep a measure of caloric values and that diet was laid out by mathematical calculation. The physician was apt to think that the caloric count was correct and the food problem correctly solved thereby. In the experimental study of nutrition it was soon found that nutrition was not a simple oxidation process. Bayliss stated that heat and combustion did not necessarily give accurately the energy of food stuffs available in the organism. In the animal body, the energy was the result of chemical combinations and was converted into various other forms without the necessary of passing through the form of heat. Large quantities of the common foods were used by anaerobic organisms as the air was not essential to animal life in all cases. Fishes and reptiles lived without air for some time and insects lived in a vacuum for some days. Foods must be selected for their right physiological value to each given individual. The fact that what would be the right physiological value for one might not be for another lay in the anaerobic metabolism in one case and the aerobic metabolism in another. The system of teaching must be constructed so that it is based on the knowledge of the physiological properties of the various food elements and the fact that there are mixed types of metabolism. It is hence a question whether it is not time we weighed the caloric method of feeding and possibly discarded it.

Discussion—DR. FRITZ B. TALBOT of Boston said he disliked very much to disagree with Dr. Chapin, but he thought that all physiologists agreed that conclusions, drawn from observations made on animals, could not always be applied to living children. He could not agree with the statement that oxygen was not necessary in the presence of muscular contraction. It had been conclusively proven in the Carnegie Laboratory that every time a muscle moved it increased the production of carbon dioxide, and carbon dioxide could not form without the necessary oxygen to combine with the elements which came from the changes that took place during muscular contraction.

Dr. Talbot thought the trouble that came from the caloric feding in the past was due to lack of knowledge of the foundation on which it was based. They had studied this subject and found many facts not known to the general public. One of these was that the caloric value of lactose was not 4.1 as had been given but 3.7. Another factor brought out yesterday in the speaker's paper was that some of the food calories were lost in the feces. Another factor that he did not enter into because of its complexity was that food calories were consumed during the process of digestion. For instance, if 100 grams of lactose were given, 7 were used by the body in making the remainder ready for its own use. Twenty per cent. of all protein taken in was consumed in making the remainder available for use in the body. The assumption that in using the caloric method of feeding one was using an accurate method was very inaccurate. The baby must first be fed what agreed with it and what it could digest. In the second place, the baby must have a food that was well balanced. In the third place, one must see that the baby got enough, and when the normal baby was getting enough it would be getting what the physiologist showed was the proper number of calories. While emphasis had been placed on different methods of feeding, he did not believe in any method of feeding, but he did not think we should omit anything of value in determining whether a baby was getting what was correct or not, and the determination of calories sometimes helped.

Dr. Julius P. Sedgwick of Minneapolis said he felt like Dr. Talbot that there was no one with whom he would rather not disagree than Dr. Chapin, but that he felt that the determination of the caloric value of food was a very valuable aid in determining the quantity of food an infant was getting. He felt, however, that the determination of calories, employed as a method of feeding, was a great mistake. The estimation of the caloric value of food was not a method of feeding. One could feed protein, or sugar or fat entirely and still have the requisite number of calories, hence it was very incorrect to use the term "caloric method of feeding."

Dr. F. W. Schlutz, of Minneapolis, said he felt as Dr. Talbot and Dr. Sedgwick had expressed themselves, that the caloric measure of food was something they should not altogether discard. It was about the only way they had of measuring the intake of food. But it was a mathematical measure and not a method of feeding. It must be taken in connection with the tolerance for the different food elements, but as a measure of quantity it was the most valuable measure they had.

Dr. W. McKim Marriott of St. Louis discussed the relation of the caloric intake of food to the conservation of energy and matter, demonstrating that when food was taken into the body it must be utilized either in the processes of the animal organism or it must be stored. The difficulty in the use of the caloric determination of the food intake was that they had not estimated the amount used by the energy output, which might be very variable. The error was in the method of making the estimation, and not that the caloric method was wrong.

Dr. L. Emmett Holt of New York said he was very glad the caloric method had been brought up simply to let them all know that it was not a method of feeding. Dr. Rotch had introduced percentage feeding and by a misnomer it had come to be known as the "percentage method," so the caloric measure of food had come to be known as the "caloric method." The estimation of percentages was exceedingly important and he regretted that it had been lost sight of. It seemed to him of the utmost importance that they should know, in balancing diets, what part was fat, what part carbohydrate and what part protein. The caloric estimation of food values was of importance, but it was a method of statement and not a method of feeding.

Dr. Chapin, in closing, said he thoroughly agreed with one point that Dr. Talbot brought up, but not the first statement, that observations on lower animals were not of value in connection with the study of problems of nutrition in human being. One cell lived and breathed and grew, just as higher cellular animals. Many errors had been made because physicians had detached the higher from the lower in animal life. Evolution started with the living cell and went up.

Dr. Chapin, in closing, said he thoroughly agreed with one that the caloric determination of the food value alone was a very inaccurate method of feeding, and his reason for bringing it up was not because the members of the American Pediatric Society were not well informed on the subject, but because there were men all over the country with little pads writing out calories and feeling that the final solution of infant feeding had been reached.

He was glad Dr. Holt had so well emphasized the advantages of knowing the proportions of the different food elements, but when it came to calories, they could get calories from anything, coal, gas, meat, cereal, etc., and the idea that they were interchangeable was of course absurd. The important point he wished to bring out was that many processes of life might take place without oxidation and, if we accepted that fact, it threw off a great deal of the value of the estimation of calories.

STUDY OF THE STOOLS OF INSTITUTIONAL CHILDREN TO DETERMINE THE EXISTENCE OF INTESTINAL PARASITIC INFECTION.

Dr. Laurence R. De Buys of New Orleans read this paper, which was based on the study of 597 children in 7 different institutions. He summarized his observations as follows:

"1. In this study the frequency of the infections by the various parasites were: trichuris trichiura, ascaris lumbricoides, hymenelepis nana, oxyuris vermicularis, strongyloides stercoralis, necator americanus and hymenolepis diminuta.

2. The hygiene, general care, duration of residence in the institution, previous environment, association with dogs, eating of dirt, absence of systematic medical inspection seemed to have a direct bearing upon the frequency of intestinal parasitic infection.

3. The 2 institutions, where systematic medical inspection was made, even though there were many crawlers in one of these institutions, showed the lowest percentage of infections, namely 17.89 per cent. and 19.00 per cent. respectively.

4. The 2 institutions, with the heaviest infections, were those where the population was transient and where there were no medical inspections, the infections being 90.2 per cent. and 83.33 per cent. respectively.

5. The youngest individual infected was in the least sanitary of the institutions investigated. This child was 2 years of age and had a quadruple infection of trichuris trichiura, ascaris lumbricoides, oxyuris vermicularis, and strongyloides stercoralis.

6. The relation of age to infection seemed negligible except that there were no infections among the infants; in other wards, before the exposure, there were no infections. The maximum number of infections was at 11 years.

7. Males were infected over 13 per cent. more frequently than were females. Again the element of exposure seemed to have had some influence. The maximum ages of the infections in boys were 11 and 12 years, and in girls 13 years. Infections, however, were rather generally distributed over several years.

8. No information of value was obtained in studying the incidences at the different ages, except that the greatest incidence in boys was 14 infections in 20 boys, or 70 per cent. of infections

at the age of 12 years; and for the girls, 15 in 21, or 71.5 per cent. of infections at the age of 8 years.

9. The symptoms usually attributed to "having worms" were as frequent, and some a little more frequent, in those not infected than in those infected.

10. One infection with the rat tapeworm (hymenolepis diminuta) was found in a female child 3 years of age. The infection occurred in a triple infection of hymenolepis diminuta and trichuris trichura with ascaris lumbricoides.

11. The eosinophilia is a valuable aid in the diagnosis of infection with intestinal parasites. It is, however, not pathognomonic of, and its absence does not exclude, an infection.

12. The eosinophiles were found as high as 28 per cent. in the positive cases and 18 per cent. in the negative cases. They were 4 per cent. or above in 59.5 per cent. of the positive cases, and 4 per cent. or above, in 32 per cent. of the negative cases.

13. No parasite in this study seemed to have a definite eosinophilia.

14. It was shown that the infection by any of the intestinal parasites in this study could exist with an absence of eosinophiles. This was found in their single infections with the exception of necator americanus and hymenolepis diminuta. Necator americanus was found in single infections in only 2 cases, in which instances the eosinophiles were 12 per cent. and 13 per cent. respectively. However, in mixed infection of this parasite with trichuris trichiura and hymenolepis nana, with the eosinophiles were as low as 1 per cent.

The other exception was the hymenolepis diminuta, which was not found in single infection, but in combination with trichuris trichiura and ascaris lumbricoides in which case the eosinophiles were 13 per cent.

15. Minimum eosinophile counts in double and triple infections were 0 per cent., while the maximum was 28 per cent. in each.

16. The 2 quadruple infections, upon which bloods were done, showed an 8 per cent. and 9 per cent. eosinophilia, respectively.

17. The diagnosis of intestinal parasitic infection is an extremely easy matter. The symptoms usually ascribed to worms are as frequent in those not infected as in those infected. Blood examinations showing eosinophiles are valuable diagnostic aids

but the only way to make a positive diagnosis is by either finding the parasite or the ova in the stool of the individual. Vermifuges should, therefore, not be given to the defenseless child unless it is known that the infection exists and its character is ascertained. when the specific drug may be given to combat the particular infection."

Discussion—Dr. Julius P. Sedgwick of Minneapolis said he considered it very necessary to drive home the point that Dr. DeBuys had brought out, namely—that institutions should have thorough medical inspection. Many institutions were conducted without physical examinations of real value, and in many the possibility of existence of worms was entirely overlooked. The medical profession was likely to regard them as of less importance than did the laity. Up in Minnesota, perhaps, they did not have as many intestinal parasites as were found in the South, but he felt that if they looked for them systematically they would find them much oftener than they had thought of, even in Minnesota. He thought this was a very important subject and it had been well presented.

Dr. Joseph Brennemann of Chicago called attention to the fact that the men who had done the most work in studying intestinal parasites were the biologists, and he wondered if the subject was more interesting from the biological than from the medical standpoint. He asked Dr. DeBuys whether he made it a routine practice to examine the feces for intestinal parasites. He thought most of them in the United States, when they thought of worms, thought of the ascaris lumbricoides. Nevertheless he had heard Dr. Kerley say he had met with this parasite in only a few instances in New York. Patients coming under his observation with this parasite had shown no characteristic symptoms, and the presence of the worms were not recognized until the parasite was demonstrated and then after the administration of santonin more would be found. He would like to know whether the others have observed symptoms attributable to the presence of these parasites.

Dr. Oscar M. Schloss of New York said he had examined many cases in which intestinal parasites were found and had classified them. He thought that the symptoms depended on the grade of infection, and that occasionally there were very distinct symptoms. Infection with the dwarf tape worm and with trichuris trichuria was very common. He recalled one instance, in which a child had a very severe diarrhea without any apparent cause, with blood and mucus in the stools. These symptoms had persisted for a long time. Even after the infection was cleared up many ova continued to be found in the feces. It was a difficult matter to get rid of them, taking months of heroic treatment. The oxyuris might be present in great numbers without producing symptoms and the ova were rare in the stools. In the ordinary life cycle of this parasite the ova were not discharged and the only way they could be demonstrated was by the administration of santonin. Sill had called attention to one symptom, namely, pain in the right iliac region.

The dwarf tapeworm was present in many persons. He had seen several instances in which a marked anemia was due to this cause. The symptoms, however, in proportion to the amount of infection, were very slight. It was very uncommon to find intestinal parasites in private patients in New York, but in certain classes of dispensary patients they were common. The dwarf tape worm was frequently found among Italians. It was known that this parasite was very common in certain parts of Italy and Sicily; in certain districts of these countries it was estimated that as many as 10 per cent. of the population were infected. Infection with intestinal parasites was largely a question of locality and nationality.

Dr. Howard C. Carpenter of Philadelphia described an epidemic of hymenolepis nana which occurred in a foundling asylum in Philadelphia. A number of the cases showed a double infection with the hymenolepis nana and the trichuris trichuria. He said they had made a careful study to determine, if possible, the method of transmission of the infection. They thought the hymenelepsis nana might be transmitted by the rat. They had trapped rats and examined them but found them negative, so far as this parasite was concerned. It seemed to him that the infection might be transmitted by the small children crawling on the floor, which gave the opportunity for direct infection from one child to another, a hand to mouth infection. It was very difficult to get rid of the infection because, even after the parasites were no longer found, the stools still continued to contain the ova. One point to which attention should be called was that of eosinophilia. It was well to bear in mind that scabies sometimes caused eosinophilia.

Dr. W. McKim Marriott of St. Louis said that in connection with the mention of pain in the right iliac region as a symptom of the presence of oxyuria, he wished to mention an instance in which this parasite was found in the appendix. This patient, a young boy, presented the symptoms of appendicitis and was operated on. Examination of the appendix showed the presence of the oxyuris in the appendix. Treatment in the usual way, of course, had no effect on the parasites in this locality.

Dr. Edwards A. Park of Baltimore said he had seen large numbers of children in France who had intestinal parasites and had made an attempt to find out whether the ascaris lumbricoides produced symptoms or not. They examined the stools of all children, as a routine procedure, and when they discovered the ascaris infection they allowed the child to remain on the same diet for three weeks and made careful notes on the symptoms from which the child suffered. At the end of that period, they did not treat the child for the infection, but put it on an ideal diet and made all the conditions as normal as possible. Then, at the end of 3 weeks, they again noted the symptoms to find out whether there were residual symptoms that might be attributed to the presence of the ascaris. They had studied about 50 cases in that way but were unable to state that the parasites produced any symptoms. The symptoms disappeared when other conditions were made normal. They were almost never able to rid the child of the parasites. In a few instances Dr. Stiles had found that the ascaris lumbricoides produced cachexia and loss of strength. Infection with this parasite was known to kill puppies. In France he knew of one child that passed 132 worms in 3 days, and he had known instances in which the worms were vomited.

Dr. De Buys, in closing, said he had not attempted to go into a complete analysis of intestinal parasites, but he would be glad to answer in so far as he could do so any questions that were irrelevant to the paper. It was his impression, he said, that a great many of these parasites did not cause symptoms. The American hook-worm caused anemia and interfered with growth and development. He had seen the ascaris lumbricoides cause severe symptoms. In one instance coming under his observation, an operation for appendicitis was performed and when the abdomen was opened the appendix was seen to move. It was found to contain an ascaris. He had known this parasite to cause intestinal obstruction and in one case it had loosened a Murphy button. In some cases he had seen infected children undernourished and undersized. In some of the infections, the stools were found to contain microscopic blood; that was more likely to occur with strongyloides infection. In examining the stools, one was less likely to find the oxyuria, if the outside of the stools was washed off.

The dwarf tape worm was carried by rats. In the 3 institutions, in which the percentage of infection with this parasite was greatest, the conditions were most insanitary.

In reference to the treatment of the hymenolepis nana, it might be overcome by the use of the male fern.

The finding of the oxyuris in the appendix was interesting as that was rather high in the intestinal tract to find that parasite.

DEXTROSE TOLERANCE IN ATROPHIC INFANTS.

DR. H. F. HELMHOLZ and DR. L. W. SAUER of Chicago presented this study of sugar tolerance in infancy under normal as well as pathological conditions. In making their investigations they used the Woodyatt apparatus and a dextrose manufactured by the Corn Products Company. It was about 99 per cent. pure. This glucose was dissolved in freshly distilled water. The strength of the solution was made approximately 10, 15 and 20 per cent., the actual concentration being determined polaroscopically. It was immaterial, so far as tolerance was concerned, whether 10 gram of glucose was injected in a volume of 10 c.c. or in a volume of 100 c.c., provided it was injected evenly in a given unit of time. At the start, the rate of injection was chosen so that it was not likely to exceed the tolerance. If no sugar appeared in the urine in 30 minutes, glycosuria would not occur even after several hours of continuous injection. If no urine was obtained after 30 minutes, the time of injection was lengthened until urine could be obtained. The urine was tested for sugar by Haines' solution, 1 c.c. of urine sufficing for the test. If the urine did not contain sugar by injecting 9.8 gram per kilo body weight per hour, the rate was increased so that 0.9 gram per kilo an hour was given, and so on, increasing as a rule by 0.1 gram per kilo per hour until sugar appeared in the urine. If sugar appeared at the first rate of injection, the injections were resumed on another day, as it was not possible to work down, at least not without washing out the bladder.

They made control injections in 5 infants that were of more nearly normal weight for their age. The tolerance of these did not exceed 1.1 gram per kilo per hour. In contrast to these findings, the tolerance of the atrophic infants ranged from 1.5 to 1.8 grams per kilo per hour. They had at present 6 such cases, a number too small to arrive at any conclusion as to the possible therapeutic value of intravenous injections of glucose. As it was, however, in 2 cases the injections were followed by gain in weight without change in diet; in one case there was a gain in weight but the diet had also been changed, and in 3 cases there was no beneficial effect.

It would appear that the sugar tolerance of normal infants did not differ much from that of normal adults. The tolerance of atrophic infants for glucose given intravenously was considerably greater, being from 1.4 to 1.8 grams per kilo per hour.

Discussion—Dr. Oscar M. Schloss of New York asked Dr. Helmholz whether he had repeated his tests for sugar tolerance in atrophic infants on successive days. He stated that he had been interested in studying the sugar tolerance of infants but had not used the Woodyatt method. He simply gave the sugar with the food. Urinary tests, made by the recent quantitive method of Benedict, showed that normal urine contained sugar in a quantity smaller than could be detected by the copper solution. By increasing the sugar up to a certain point, there was always an increase of sugar in the urine even though it was not sufficient to reduce the copper solution. One point of interest was that there might be considerable difference in renal permeability at different time.

Dr. W. McKim Marriot of St. Louis stated that they had shown that atrophic infants could take care of large amounts of sugar. They had administered large amounts of glucose and dextrose by mouth and found that as much as 1½ grams of sugar per kilo body weight per hour could be given before glycosuria showed itself.

Dr. Fritz B. Talbot of Boston stated that their work had shown that in new born babies a normal amount of blood sugar was found up to a certain point, because the fats were ready to step in at any time that the sugar reserve was low. Although it might be true that the body acted as a sponge in taking up sugar, he did not think that they had enough basis to prove the point.

Dr. Helmholz in reply to Dr. Schloss's question said their results had been remarkably constant when the determinations were made at intervals of 2 or 3 days. In regard to the glycosuria, Woodyatt had shown that, if an individual did not secrete sugar in the urine in a half hour, at a certain rate of injection, one could keep on giving that amount for several hours before glycosuria was produced.

ANEURYSM OF THE ASCENDING ARCH OF THE AORTA IN A BOY OF THIRTEEN YEARS

Dr. Henry Heiman, of New York, reported this case because of its infrequent occurrence and the interesting x-ray findings. The family history showed that the father died of epilepsy 9 months previously and the mother had had 2 miscarriages. The boy gave a history of having had several attacks of articular rheumatism, the last one 3 years ago. With the exception of measles, 7 years previously, there were no other illnesses.

The history of the present illness began 8 years ago with the gradual onset of dyspnea on exertion, precordial pain, and a slight cough. These symptoms had grown progressively worse.

The physical examination showed marked pulsation of the carotids and the apex impulse was seen considerably to the left of the midclavicular line. There was no bulging at any point and no thrill could be felt. No tracheal tug was present. Percussion showed the heart enlarged, particularly to the left. There was a rather wide area of dulness at the level of the 1st and 2nd interspaces, extending to the right 6½ cm. and to the left 4½ cm. from the midsternal line. On auscultation there was a systolic murmur, best heard in the third interspace and extending downward and upward. There was no bruit and the pulse was corrigan in type; capillary pulsation was present. The blood pressures in each arm recorded as varying only 5 mm. The electrocardiogram showed marked left ventricular predominance. The flueroscopic examination was especially interesting, revealing an aneurysm of the ascending arch of the aorta. The x-ray corroborated this finding. The Wassermann test was 4 plus. The mother's reaction also showed 4 plus. In the epigastrium there was a hard mass, about 6 cm. in diameter, extending down about 8cm. from the ensiform movable, not tender, probably a gumma. The spleen was markedly enlarged, extending to the iliac crest. There were no palpable epitrochlears and no other stigmata of lues.

This case was presented because of the great rarity of aneurysm of the thoracic aorta in children. In all, there were about 20 cases of aneurysm of the aorta reported in the literature. The etiology in the majority of cases was very definite. As far as the writer was able to ascertain, this case was the first in a child of an unquestionable proven luetic aneurysm. The patient had been treated with 2 per cent. mercuric ointment and up to the present time no apparent improvement had been noted. Salvarsan had not been given, because of a possible danger in this type of case.

SOME RECENT CASES OF FOREIGN BODY IN THE TRACHEA, BRONCHI AND ESOPHAGUS (Journal of the Tennessee State Medical Association, December, 1918, p. 293). As illustrating some of the varieties in which foreign bodies may be present, McKinney reports, with radiographs, a case of pin in the larynx in a child of twelve; a tack lodged head down in the opening of the right bronchus, in a child five years of age; a penny in the esophagus of a child two and a half years old, and mentions a case previously reported by him where a copper brad was removed from the bottom of the inferior lobe bronchus, between the eighth and ninth ribs, in a child of five years. He emphasized the extremely dangerous character of tracheal and bronchial foreign bodies of the nature of seeds, and cites, as examples, the case of a child two years of age, who had inhaled a grain of corn, which was moving up and down in the trachea, and which, just as removal was about to be attempted, on expiration jumped up between the vocal chords, where it was firmly held, and if the operator had not placed his mouth over that of the child and blown the seed back into the trachea, probably would have asphyxiated the patient or required an urgent tracheotomy. The seed was later removed. Another, and fatal case, was that of a lima bean, which swelled and lodged at the bifurcation of the trachea, completely cutting off air from the lungs in a valve-like manner, killing the child before it could be removed. McKinney calls attention to the desirability of operating upon these cases without anesthesia, if practicable. —*Southern Medical Journal.*

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ORIGINAL COMMUNICATIONS

A RETROSPECT OF FIFTEEN YEARS' EXPERIENCE IN THE TREATMENT OF HYPERTROPHIC PYLORIC OBSTRUCTION IN INFANTS*

By Langley Porter, M. D., M. R. C. S., Eng.
San Francisco.

My interest in the subject of pyloric stenosis runs back to my student days when I had the opportunity of seeing a few cases in the wards of Robert Hutchinson, one of the most ardent and persistent opponents of operation in this disease. Hutchinson's treatment included daily lavage of the stomach with an alkaline solution, the application of heat locally to the abdomen, and the use of antispasmodics. Invariably the patients did badly for a period of weeks, but as his nursing staff was very skillful and very devoted, ultimate recovery was usual. Hutchinson himself in a paper on the subject says one of his nurses commented that when these children got bad enough "they always turned the corner and proceeded to get well."

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*Read at the seventieth annual session of the A. M. A., Section on Diseases of Children, held at Atlantic City, N. J., June 11, 12 and 13, 1919.

But under such treatment even its most ardent advocates must admit that the children are for long periods invalids at a time of life when intercurrent diseases are exceptionally fatal, and when all the resisting powers of the infant organism should be conserved. Therefore it early became obvious that if any fairly safe operative procedure could be devised to ameliorate this symptom, it should be adopted in order to assure a rapid return to normal nutritional conditions.

With this idea in view during the early 90s a number of attempts were made to devise operations in the nature of pyloroplasty. The Finney operation was done, and Fredet, a French surgeon, published a description of a simple longitudinal incision of the hypertrophied pyloric ring muscle which he attempted to resuture in the transverse direction. His cases were few but the results were reported to be perfect, in that immediately after operation the obstruction at the pylorus completely disappeared, and the patients suffered no shock and rapidly acquired normal digestive and nutritional capacity. However, for some reason Fredet's work did not receive recognition and the prolonged and taxing operation of gastroenterostomy was adopted as the surgical therapy of this condition, and only after Downes of New York introduced Fredet's operation did the simple incision become a recognized procedure of treatment in this country.

Apparently Downes' attention was brought to the method through the writing of Rammstedt, who did one operation, the account of which he published, undoubtedly under the inspiration of the Fredet article, but he gave Fredet no mention, and if we are to tack names onto operations, we should certainly maintain Fredet's in connection with this simple incision of the pyloric mass, because he was undoubtedly pioneer in the matter.

There was a long interval of time between the Fredet publication and the introduction of the socalled Rammstedt operation into this country. During that time the position of the medical man who undertook to treat cases of obstructive pyloric hypertrophy was difficult. Two schools of thought contended with much vehemence, the one that operation was unnecessary, and the other that to withhold operation was a form of mal-practice; and the decision was often so perplexing that physicians were tempted to wait until, when finally operation was decided upon, the child was beyond possibility of recovery, although a fair number of sufferers got well under medical treatment without recourse to surgery.

However, treatment by gastric lavage, and the other purely medical methods available, such as the use of antispasmodics, atropine and opium derivatives, proved very unsatisfactory in general practice and in most hospitals where large experience such as prevailed in the wards of Hutchinson was not available, and where, therefore, the nursing and treatment was less effective. Always, however, the most striking fact apparent was that certain cases in which obstruction was dominant, recovered promptly and completely under the most diverse methods of medical treatment. Sometimes, after a few stomach washings, sometimes without stomach washing, but with the use of antispasmodics. On the other hand it was equally striking that other cases which appeared to be less severe and to have had less complete obstruction, could only be remedied through surgical intervention.

Personal experience only emphasized the perplexity engendered by a study of the literature. So far as such puzzling cases went there was no question of the diagnosis, for amongst the many other cases brought to operation, only twice has the diagnosis been unjustified; once when there was a stricture of the upper duodenum which completely mimicked the clinical picture of pyloric stenosis, and a second child who had an alimentary intoxication in which vomiting, constipation, and an enormous pyloric wave of unexplained etiology, either at the operation or autopsy, were the predominant features. So, resting upon analogy, we have every reason to feel that those cases which did not come to operation were true examples of obstruction with hypertrophy of the pyloric muscle. This view is reenforced by the fact that several of the cases which were medically treated died and came to autopsy and in each case was revealed the characteristic condition of pyloric stenosis.

All this evidence led me years ago (Cal. State Journal of Medicine, 1909,) while discussing the views of various authors, to make the following statement:—

> "The school which seems to me to have the right with it is led by Cautley, who divided cases of pure pyloric hyperplasia into those in which the circular muscle is so hypertrophied, the pyloric passage so narrow, and the mucous membrane so folded that the stenosis is absolute and anatomical.
>
> The second class of case from his point of view is that in which the hypertrophy is also marked, but the pyloric canal is narrowed to a slight degree. Obstruction here he thinks attributable to irritative spasm of the hypertrophied pyloric sphincter, and patients suffering from this type of irritation, under wise feeding may recover without other treatment. Hutchinson believes that all cases are to be placed in Cautley's second class and that all will get well under proper treatment. Hutchinson has maintained this point for twenty-five years."

Ten years ago, with a limited experience, it seemed that operation was urgently demanded in every case. In other words, at that time allowing Hutchinson full weight for the final success of the cases he had reported, it was necessary to ask ourselves if the brilliant results that surgeons had achieved in this field were to be ignored. If we ignored them could we justify ourselves if we allowed these children to lag along and to suffer in painful emaciation for four or five months with no certainty of final recovery, and that ever present possibility that they might go on to a condition that made the change for successful surgical intervention slight? The personal opinion at that time held, was that stomach washing and medical treatment should be limited at the most to ten days or two weeks, and if at that time the child was not improving, or if at any time during this interval there was retrogression, that a surgeon should intervene. On the other hand, if during that period there was some improvement, no matter how slight, or even if the child held its own, we were unquestionably justified in withholding operation.

Four years ago my own belief departed radically from this standard after an opportunity given me to see some of Dr. Holt's and Dr. Downes' cases operated on by the simple incision method —the so-called Rammstedt operation. The operation was so easily done, it was accompanied by so little shock, and the transformation of the child when in good pre-operative condition from a very sick baby to a little one taking food and digesting it in the normal manner, was so striking that no one with clinical judgment could doubt that here was an enormous step in advance over the old method through operation by gastroenterostomy. This new method indeed was one that would justify the physician in urging parents to accept immediate operation for this group of children. Thereafter this operation became routine with us, and in the next 3 years 26 cases were subjected to the procedure, all but 2 of which recovered. Both fatalities arose from accidents that could not be attributed to the method of operation. They will be discussed in detail later. These experiences testified to the absolute advantage of the simple pyloric incision over previous methods, medical and surgical.

About 1 year ago Huenekens of Minnesota, in a personal communication, stated that he was able to overcome the symptoms of pyloric stenosis by the use of the thick formula feedings of Helmholz and Sauer. It was natural to make a mental reservation that diagnosis was probably in error. However, in the last 6 months, 10 babies have been treated by this method; each had all the clinical signs of obstructive pyloric stenosis, any one of which up to this time would have been subjected to the Fredet operation, with full confidence that we would have found a definite hypertrophy of the pyloric muscle with obstruction at the outlet of the stomach, and in practically every case there has been rapid cessation of vomiting and a complete return to nutritional health, although in most cases peristalsis has remained visible.

It may be of interest to give more in detail the results of our experiences in the different fields of therapy. At the 1911 meeting of the American Medical Association, Dr. W. B. Lewitt joined with me in presenting a paper based on the study of 14 personal cases, with the addition of 5 others seen by the courtesy of colleagues. Of these, 3 died without operation after a period of observation so short that no valid conclusions could be drawn. It was interesting to note that 1 of these patients died of a hemorrhage evidenced by the passage of blood both from the stomach and bowel, a condition that I have seen since, and which has been reported by other observers. The second died of convulsions, apparently in a state of true acidosis. The third died 24 hours after the appearance of good milk stools. This child was taking a reasonable formula, and on autopsy a huge hypertrophy was present. This experience was one that confirmed me in the opinion that the size of the tumor had little to do with the extent of obstruction.

Eight of these babies had gastroenterostomies performed, of which number 5 survived, and in the following 3 years another group of 12 children came under observation upon nine of which the same operation was performed. Of these 2 died immediately after the operation. The children who survived the operation all did well, several of these have had bismuth meals and radiograms taken at varying intervals since the operation, in each case the bismuth meal still passed through the gastroenterostomy opening and the pyloric way was not functioning, at least so far as the bismuth meal was able to give us evidence.

One of these patients was a boy of 10 years who had been operated on by Dr. Stanley Stillman when the child was 5 weeks old. This child swallowed a 25-cent piece when he was about 9 years old, and the x-ray showed the coin to be lodged in the pyloric end of his stomach; passage through the pylorus was not possible. Later the coin dropped back and apparently passed through the gastroenterostomy opening, appeared in the large intestine and was later evacuated. Such radiographic evidence has been taken by Scudder and others to mean that the pylorus in the true hypertrophic stenosis never opens and that relief was to be had only through operative procedure. However, the case above quoted—the one dying 24 hours after the appearance of good milk stools, and whose autopsy revealed a huge tumor, seemed to contradict such an assumption.

The deaths among our 17 gastroenterostomies were sufficient to make us have anxious moments before recommending operation, especially in view of the number of cases which inexplicably recovered without surgical intervention. On the other hand, the patients that died suddenly when medical treatment seemed to be succeeding, made one equally loath to prolong medical treatment. The situation at that time was exceedingly unpleasant for the medical man who had to face the problem and to advise the parents. Also the children after gastroenterostomy suffered materially from shock and were a long time recovering their normal nutritional balance, and there was always the uncomfortable knowledge that their intestines were functioning in an abnormal manner; so that when a simple surgical method was introduced it was eagerly accepted, and after a few operations, when it became apparent that the technic was simple, shock apparently nothing, and that the patient returned to recovery rapidly, the pediatrists became enthusiastic supporters of simple incision of the pyloric mass.

In the years since 1915, I have been responsible for 26 operations by simple incision on cases of pyloric stenosis. Of these all with one exception recovered. However, a second case died a week after operation through a strangulation of the bowel. In every instance the child was able to take and retain sugar solution within 4 hours, and within 24 hours was taking normal feedings, breast or bottle, and handling it without disturbance. In every case the children have made steady progress and gain, and have become especially well nourished infants.

It is not the province of this paper to discuss surgical technic, but the technic is exquisitely simple although it demands great attention to detail. Of these cases, 18 were operated by one surgeon, 2 each by 3 other surgeons. The others were done by individual physicians, in one instance by a general practitioner who was not a specially trained surgeon. The virtue of this operation lies in the fact that a child who has been an invalid and in great distress, within a few days assumes an entirely satisfactory state of health. A few of the children have persisted in their vomiting and we have found in such cases that by putting the child in a nearly erect position in bed, that the vomiting ceases almost immediately. In 1 instance, a case in which I believe there was failure to entirely separate the lower edge of the tumor, the vomiting persisted almost as vigorously as before, and was finally checked by the use of the thick formula feeding. Certain cases not under my own care but seen through the courtesy of other physicians, have suffered from a severe type of diarrhea coming on four or five days after operation. This, I believe, was due to the omission of stomach lavage at the time of the operation. Many times, in this condition, there is an accumulating residue of food which has become contaminated with bacteria, and when this contaminated mass enters the intestine in quantities, the diarrhea may easily be brought about. Another important detail in the management of these patients, who are almost invariably suffering from fluid depletion, is to supply them freely with fluid either under the skin, in the peritoneum, or by the Murphy drip.

Post-operative feeding is simple. The first 2 or 3 feedings consist of 5% lactose or maltose solution, then half breast milk and water, or a low fat formula if the child is bottle fed, and within 48 to 72 hours to go on to the full breast milk or to a formula proper to the age of the child.

There is no doubt that this simple incision method of Fredet as adapted by Downes, is a most brilliant surgical achievement, one to which any pediatrist may submit a child with pyloric stenosis without fear of an unhappy outcome. Even when the children have been neglected for a long period of time, there is little chance for a catastrophe. Nevertheless the last 10 patients that I have seen have been treated dietetically with uniform success with a modification of the method of Helmholz and Sauer.

Thick foods for infants were first used to meet the needs of babies with idiopathic vomiting, a condition in which there is no antomical reason for the regurgitation. McClure and Hahn both were well rewarded when they treated such cases with thick food. Sauer, in the *Archives of Pediatrics*, July, 1918, reports the first use of this type of food as a therapeutic measure in the treatment of cases of undoubted hypertrophic stenosis. Twelve cases were reported, and in the words of Sauer: "In all but 1 case the effect of the thick farina feedings was striking. In 11 of the 12 cases the vomiting soon stopped, although in most of the cases the peristaltic waves and the tumor (where palpable), persisted for weeks or months after the vomiting ceased. Eleven of the 12 cases are now in excellent health, the remaining 1 dying of bronchopneumonia 8 weeks after the vomiting ceased. Of the 12 cases all but 2 were on the breast when the vomiting began. Eleven of the infants were taken care of in the home, 6 by the mother without any trained assistance. Nine of the cases occurred in boys, and 3 in girls."

In the 10 cases under my care so treated, the results have been equally striking and quite as satisfactory. None of the 10 has been brought to operation; in all the vomiting ceased and ceased so promptly that it seemed almost a miracle, and with cessation of the vomiting came a rapid and gratifying restoration of nutritional balance. One point that is not mentioned by Sauer is the striking increase in tissue turgor and the marked improvement in the child's well being. So much so that we have adapted this feeding to many cases of malnutrition with most satisfactory results.

In some of our cases we have used the unmodified formula as given by Sauer, but the use of farina in many instances is unsatisfactory in that diarrheas readily set up through the encouragement of a saccharolytic flora. For this reason in 2 of our cases the thick feeding has had to be abandoned. Rice flour offers less encouragement to the aciduric organisms and has the advantage of cooking into a thick paste which is more readily soluble under the influence of moderate degrees of heat, so that it is easier to feed to the baby than the formula made with farina. The cereals made with rice flour are better protected colloids than those made with the courser farina, and apparently it is by virtue of this colloidal quality that the thick feeding acts, inhibiting the pyloric reflexes.

In the preparation of the formula, fat is kept low at first, and the milk is calculated as in any simple formula. Experience shows that a 10% solution of the rice flour is best. The formula is prepared by mixing the water and milk, bringing it to boil and adding the cereal which is made into cream with a little cold water. This is boiled over the flame for 10 or 15 mnutes and stirred constantly. The sugar is then added and the mixture boiled in a double boiler for 1 hour.

We have found it possible to feed this very easily to a baby by using the Hygeia nipple, the end of which has been slit with a very sharp knife. The Hygeia bottle with the food is kept standing in a basin of hot water in order to keep it liquid, and it is then passed from the bottle into the open nipple with a spoon. Children take it readily and without any objection.

I will only discuss in detail 1 of the 10 cases treated in this manner. The results of this case were the most striking of any—a baby, M. A., a patient of Dr. F. R. Orella, seen by his courtesy on October 8th, 1918. This child, a girl of 6 weeks, was in a perilous condition. It had the ordinary history of pyloric stenosis. The birth weight had been 6½ pounds and the first weeks of life were uneventful. Toward the end of the third week vomiting began and continued. It was persistent and projectile, any feeding was rejected, even water was rarely retained. There was a steady loss of weight so that when I first saw the infant the weight was 6 pounds, 4 ounces. She was so depleted from vomiting as to present the typical hypertonic rigidity of the dried-out child. Her fontanelle was sunken, her pulse was feeble and slow, her breathing irregular in rate and depth. The child was almost moribund. It was obvious she could not survive the shock of operation so with reluctance it was decided to try the thick feeding. It was unreasonable to suppose that any child so depleted of fluid could digest or absorb any food, therefore the first orders given and carried out were:

Give intraperitoneal injection, 500 c. c. normal saline solution.

Formula—

Skimmed milk	5 oz.
Water	15 oz.
Rice flour	4 tablespoons
Dextri-Maltose	1 tablespoon

Make up 16 oz. of food. Boil thoroughly 1 hour in double boiler. Feed 2½ oz. every 4 hours.

Normal salt and glucose, 7% solution, a few drops by mouth with medicine dropper, to total 1-1½ oz. per hour.

Normal salt solution 1 oz. by rectum every 2 hours at a temperature of 100 degrees.

Leave binder off, clothing loose.

Babe to go to operating room to have 100 c.c. of saline injected into peritoneum.

All orders were carried out. Babe retained saline, vomited food once.

Oct. 9—Babe's weight 7 lbs. Gain due to injected fluid. Some loss expected after this.

Oct. 10—Dr. Porter visited, same treatment continued, weight 6 lbs. 4 oz. Feed every 3 hours.

Oct. 11—Same treatment—weight 6 lbs. 12 oz.

Oct. 12—Same treatment—weight 6 lbs. 12 oz.

Oct 13—Same treatment—weight 6 lbs. 12 oz.

Oct. 14—Same treatment—weight 6 lbs. 13 oz.

Oct. 15—For the first time babe vomited. Dr. Porter telephoned orders, stomach washed out with soda bicarbonate.

Oct. 16—Babe leaves hospital good condition. Weight 6 lbs. 12 oz.

The child returned home and made a steady gain in weight and well being, not vomiting again, and weighing during the sixth month, 17 pounds.

The other 9 cases improved just as remarkably as this one, but were not so serious.

So it happens that now after years of groping we are possessed of 2 therapeutic measures, both of them effective, one as simple and harmless as a surgical procedure can be, the other a medical measure uncomplicated and harmless. With a clear conscience the medical man may advise either the Fredet operation or dietetic treatment with a thick feeding. Or, better still, he may use the thick feeding with an assurance that a large proportion of the cases will respond with complete restoration of digestive and nutritional function and for the stubborn cases there is still left the brilliantly successful operative method of Fredet which, used early enough, ought to obtain a 100% of cures.

CHART SHOWING RESULTS OF CASES TREATED

	No. of Cases	Deaths	Recoveries
Gastroenterostomies	17	5	12
Fredet-Rammstedt	26	2	24
Medical Measures .... Rational formulae	9	4	5
Dietetics .... Thick formula	10	0	10

CASES:—

J. C.—6 months old. Weight 8½ pounds. Always vomited. Very unhappy. Bowels loose.

Physical Examination—Erectile stomach but no wave in office. Afterwards slight wave in hospital.

Formula—Skim milk with Cream of Wheat.

Perfect result. No vomiting. Gain 8-10 ounces a week. followed baby three months by 'phone, found a continual gain. Never saw child again.

D. V.—7 weeks old. Weight 8 pounds. Vomits easily but not projectilly. Does not gain.

Physical Examination—A decided wave over upper abdomen.

Formula—Thick, rice flour—low sugar.

Saw child every month for four months. Very slight wave present each time. No more vomiting, continual gain from 6-8 ounces a week.

At 6 months put on normal liquid formula. No vomiting, continual gain.

E. S.—3 months old. Weight 9 pounds. Vomiting at 3 weeks. Projectile and accumulative. No gain. A large wave noticable.

Formula—Thick, rice flour—low sugar.

Gained 8 ounces a week. No vomiting at first but some later due to too fast feeding and carelessness in making up the formula. The wave was seen continually for 6 weeks. Went back to a thin formula and vomiting began again.

M. M.—2 months old. Weight 8½ pounds. Child had always vomited. Breast fed. Projectile. Lost weight continually. Had been on atropine and skim milk. No change. Only slight wave. Decided erectile stomach. Put on 4 thick formula feedings and 3 breast feedings. Continued to vomit breast, but no vomiting of thick formula. Gain from 8-10 ounces a week. Gradually taken from breast, absolutely no vomiting. At 5 months no wave seen.

M. McC.——, 9 weeks old. Very uncomfortable. Very constipated. Always hungry. Vomits continually, projectilly. Physically a very thin baby. A very large wave seen. Sent to Children's Hospital. Put on a thick formula. Some vomiting while in the hospital but decided gain and improvement, although wave still seen.

Heard from child over telephone for 4 months. Did well and gained, but vomited at times very easily.

J. C. S.——History—Continual vomiting. A large wave seen. Vomiting on receiving cereal had stopped. Baby gains 6-8 ounces a week.

Clinic case—Dr. Morris. Breast fed. Always vomited. Badly constipated. Cried continually. Mother thought that vomiting came from straining.

Pale baby but only slightly under weight. A decided wave seen though small. Put on 2 thick formula feedings and 5 breast feedings. Only slightly better. After 2 weeks put on 7 feedings of thick formula. Stopped vomiting. Gained 12 ounces. Comfortable. Then went East.

Baby W.—5 weeks old. Weight 6 pounds. Baby vomited continually, projectilly. Losing weight. Large wave seen. Put on thick formula and vomiting stopped immediately. Baby happy. Began to gain. Seen only twice after that. Wave still visible. Baby and parents happy. A letter sent was returned.

Baby R.——. Continual projectile vomiting. A wave seen, only slight. Not emaciated. Put on thick formula. No more vomiting. Gain 8-12 ounces a week.

Baby H——. Known only by letter. History of continual vomiting. Sometimes projectile. Mostly regurgitation. Very unhappy. All simple formulae tried for one month. No gain in weight. Vomiting continued. When put on thick formula baby immediately began to improve, gained 8 ounces a week.

Vomiting stopped. Baby never examined.

J. K—— 8 weeks old. Weight 6 lbs. 9 oz. Referred by another physician for advice as to operation. A very thin, emaciated baby. Very unhappy, crying continually. A very large wave seen. Vomiting projectile. Put in Children's Hospital with a special nurse. Put on thick formula. Stopped vomiting immediately. Began gaining 2 ounces a day, but very constipated. Sent home after 6 days with explicit directions. After one week returned with diarrhea and a return of regurgitation. In hospital for 2 weeks, but neither regurgitation nor diarrhea stopped: always 5-8 stools. Child held his own. Put on breast milk; still regurgitates but gained 2-3 ounces a week. Wave always visible. Then we lost track of him but understood that child was later put on a strong formula, 4 ounces of milk to pound weight with high sugar, and was gaining.

Baby M——. Would never have come to operation although a slight wave was always noticable. Always vomited breast milk. Dilution of breast milk. Atropine, condensed milk, etc., were used in connection with breast but of no avail.

Put on 2 bottles thick formula. No vomiting after these although vomiting continued after breast. Later put on 4 bottles of thick formula, the same good result and a steady gain of weight. Still on 4 thick formula and 3 breast at the time of writing.

240 *Stockton Street.*

SOCIETY REPORT

SECTION ON DISEASES OF CHILDREN AMERICAN MEDICAL ASSOCIATION*

Franklin P. Gengenbach, M. D., in the Chair.

Dr. Franklin P. Gengenbach, of Denver, Col., delivered the chairman's address in which he said there should be some permanent record of the work done by the members of the Section in the war. A committee had been appointed to collect this data, and to record the work done in the various services—the Army, Navy, Red Cross and in relief work. Many men who would like to have gone into the service were persuaded that, in view of the great need for child welfare work and for the teaching of pediatrics, it was their duty to remain at their posts as teachers and to engage in Red Cross work at home. At the last meeting they had heard Dr. Lucas describe his relief work in Belgium and later in the work among the repatriates in France, and this year Dr. Grulee would tell of his work in France. Many pediatrists had been called to take part in this work. A list of the names of these men had been compiled and also a list of those who had served with the Red Cross in this country. There were altogether 120 pediatrists from this Section working in the various services during the war. It might seem at first sight that there was very little for the pediatrist to do in these services, but it was to be remembered that the pediatrist must be familiar with the ground work of general practice and he must be first of all a good internist. He understood the methods of dealing with epidemics and was therefore a very useful man in the camps and cantonments.

Dr. Gengenbach said the war had led us to appreciate the necessity of training men for service and it had emphasized more than we had realized before, that it was essential to conserve infant life, since so many fathers of children would not come back. Thus many teachers and pediatrists in this country, while the eyes of the people of the country were riveted on the conflict, were brought to realize the great importance of child welfare work at home. The coming of peace had not completed their work, but had left them with great problems in child welfare work to be solved.

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* Seventieth Annual Session held in Atlantic City, N. J., June 11, 12 and 13, 1919. Detailed report specially made for Archives of Pediatrics.

THE VICTORY OF CHILDREN'S YEAR.

Dr. Anna E. Rude, of Washington, D. C., made this presentation in which she reviewed the work of Children's Year, describing the 3 drives: 1. Weighing and measuring drive; 2. Recreational drive; 3. Back to school and stay in school drive. She stated that the Children's Year Campaign had met with a quick and sincere response from the entire country. The value of the campaign lay in the fact that it aroused a nationwide interest in child welfare. The work was done, as was generally known, through the Women's Council of National Defense, representing a working body of 11,000,000 women. Cities, towns and villages had participated and 166,000 babies were registered. A careful analysis had been made of 100,000 children in order to tabulate weights and heights and to ascertain the ratio of weight to height in different parts of the country, and in children of native and foreign parentage. Among the results of the campaign, they believed there would be a permanent reduction in the infant mortality rate; there would be an improvement as regards the correction of defects, and there would be a greater realization of the importance of birth registration. In one state, over 60,000 children were examined by physicians and 47 per cent. were found to have remediable defects. Another result of the Children's Campaign was the awakening of the people to the need of establishing a division of child hygiene in every city department of health. The campaign has also served to demonstrate the usefulness of the public health nurse and had made a service of that kind a part of the public health work in a good many communities. In many localities the women's committees had introduced play-ground facilities. Finally, owing to war conditions many children had left school and the Children's Bureau made a determined drive to get as many of these children as possible back to school and to keep them there.

President Wilson had expressed his approval of their work and of the minimum standards for child welfare which were submitted by the Washington Child Welfare Conference in May, 1919. At this conference, leading American experts discussed the national standards which were recommended and these were submitted later for consideration to the regional conferences held in different parts of the United States following the Washington conference. These standards were intended only as minimum standards and not as in any way limiting the degree of protection which an advanced state might desire to give its children.

Under the minimum standards, for children entering employment a minimum age of 16 years was set, except that children between the ages of 14 and 16 might be employed in agricultural and domestic service during vacation periods. The employment of minors in dangerous and hazardous occupations or in any work which would retard their proper development was prohibited. The educational minimum required that all children should be required to attend school for at least 9 months each year, either full or part time, between the ages of 7 and 18 years. Provisions were made for continuation and vacation schools for those who had to go to work on the completion of the eighth grade. A child was not allowed to go to work until he had had a physical examination by a public health physician or school physician and had been found to be of normal development for a child of his age and physically fit for the work at which he was to be employed. No minor should be employed more than 8 hours a day. These rules also provided for the administration of the regulations for factory inspection and physical examination of employed minors.

The minimum standards, formulated for public protection of mothers and children, provided for maternity or prenatal centers and the outline of the work to be done at these centers was stipulated and provided for adequate prenatal care.

The minimum standards for the protection of infants and children of pre-school age were: 1. Complete birth registration by adequate legislation requiring reporting within 3 days after birth. 2. Prevention of infantile blindness by making and enforcing adequate laws for the treatment of the eyes of every infant at birth. 3. Sufficient number of health centers to give health instruction under medical supervision for all infants and children not under the care of a private physician, and to give instruction to mothers in the care and feeding of infants and children.

The minimum requirements for school children provide for the proper location, construction, hygiene and sanitation of school-houses; adequate room space—no overcrowding; adequate recreational facilities, physical training, open air classes, rest periods and for proper medical and nursing supervision, including a complete standardized physical examination once a year, with monthly weighings, wherever possible. There were also standards outlined for the supervision of adolescent children and minimum standards for the protection of children needing special care. Regulations were also formulated governing the removal of children from their homes under unusual conditions, governing child placing, the care of illegitimate children, juvenile courts, and the mental hygiene and the care of mentally defective children.

This report on minimum standards closed with the statement that there was urgent need of a more adequate body of scientific literature dealing with principles and practice in the children's field of social work. The child welfare work legislation of every state required careful consideration as a whole at reasonable intervals in order that necessary revision and coordination might be made. This conference recommended that in states where children's laws had not had careful revision as a whole within recent years, the governor be requested to take the necessary steps for the creation of a child welfare committee or commission. It was also urged that the President of the United States be asked to call a conference during the next year, in conjunction with the governors of the various states, to consider the whole question of child welfare legislation.

THE PEDIATRICIAN AT HOME DURING THE WAR.

Dr. Frank C. Neff, of Kansas City, Mo., said that practically all pediatricians had offered their services to the government, Red Cross, draft board or other war agency. Many of those who volunteered for the Army were not called. The unselfishness and patriotism of these men, whether they served at home or abroad, was worthy of commendation on the part of the Section. Those who stayed at home filled a field of usefulness as well as those who went abroad. Teaching, hospital dispensary, and child welfare work were maintained by them. The work at home had been complicated by the worst epidemic ever known.

In speaking of the teaching of pediatrics during the past 2 years, Dr. Neff said that in most colleges and hospitals postgraduate work had been discontinued and the services of the pediatric teacher enlisted in the undergraduate departments of the schools. Research work and every thing not absolutely necessary was sacrificed. Increased demands were made on the pediatricians as a result of the fact that many mothers left their children to go into work of various kinds. The children of soldiers were also cared for and these were given the preference. A questionnaire had been sent out and the replies showed the work done by pediatrists in large cities in connection with the care of families of soldiers, Red Cross work, first aid classes, and home relief centers. In every city during the epidemic of influenza, pediatricians were doing influenza work to the extent of their time and strength. The work of the Children's Year increased the work of pediatrists everywhere.

As to the effect of the war on undernutrition, in some cities high wages and the fact that women went to work made sufficient food possible. As a whole the nutrition of American children had not been reduced by the war to any extent. Child welfare work had been a great aid in this respect during the war, state, county and municipal organizations having been formed to meet the problem of proper nutrition. The pediatrist had been interested in these local health movements and in the campaign against venereal disease, which was for him an important matter owing to the hereditary effects of these diseases.

He concluded from his experience, that the last 2 years had brought a general awakening of the interest in pediatrics owing to the revelations of the draft boards as to the large number of remediable defects which had forced upon people the need for proper health supervision. There was already a definite and active movement for efficient child welfare work. In the successful application of methods, much depended upon the cooperation of the local profession and the pediatrists. Institutions would now be called on to supply trained welfare workers and the general practitioner needed knowledge brought to him. The pediatrician stood ready to do his part in the program offered by the lessons of the war, namely, the betterment of child life, so that it might grow to the strongest physical, mental and moral manhood.

Discussion.—Dr. E. V. Davis, of Chicago, made a plea for closer coöperation between the obstetrician and the pediatrist and said there should be a child welfare station in connection with every maternity hospital so that the students in these hospitals could get the right kind of knowledge of pediatrics from the right kind of pediatric teachers. This plan would also result in a much larger number of babies being turned over to the infant welfare station for supervision.

Dr. H. F. Helmholz, of Chicago, said they were likely to get into the habit of thinking that if a man took care of sick children he was fitted to do preventive work. It should be realized that the 2 kinds of work were entirely different. The physician or nurse, inexperienced in preventive work, was likely to say to the mother "Your baby is well, you need not come again." It sometimes took a nurse as long as 6 months to grasp the idea of the preventive side of the work when she had been accustomed to dealing with sick babies. It was very important to make this distinction that preventive work was very different from the practice of medicine and required special training.

Dr. Neff, in closing, said he wished to speak of the practical results in the past 2 years. Child welfare work, he said, was here, and there were very few cities without it, but if it was not to be in a chaotic state and the plaything of politicians, it must be handled by men who understood the problem. Certainly the plan that Massachusetts had adopted could be recommended. The question now was, what were they as pediatrists going to do to help this work along. If they did not want the work to fall into the hands of politicians they would have to start off right. This meant that there should be a trained personnel in child welfare work who should give their full time to this work and there should be cooperation between medical and social service agencies engaged in this work.

THE WORK OF THE CHILDREN'S BUREAU OF THE AMERICAN RED CROSS IN LYONS, FRANCE.

Dr. Clifford G. Grulee, of Chicago, made this presentation, which was liberally illustrated by lantern slides. He stated that the work of the Children's Bureau of the American Red Cross was developed as an emergency measure to meet a special situation. It had, however, some ideas which might be used to advantage in the development of children's work in communities in America. The chief obstacle to such development would be the same as that encountered in France, namely, the tendency of each charitable organization to wish to go its own way without much regard to other organizations dealing with kindred subjects. It was possible to control the situation in France, not because ordinary conditions were different, but because the exigency of war produced a situation which rendered it necessary that outside aid should be given local charitable institutions. Thus by subsidizing these various agencies they had been able to secure concerted action.

The greatest factor in the educational work was the great child welfare exhibit given in Lyons. Some 200,000 persons visited this exhibit and showed a most unusual interest. At this time much literature on the subject of child welfare was distributed and all the usual means employed in connection with such exhibits were utilized to arouse an interest in child welfare work. Another feature of the educational work was the playground and recreational work. The French children did not know how to cooperate in play as did American children. Probably one reason for this was that the teacher was held responsible if a child was hurt while playing at school, hence one of the branches of their educational work had been the introduction of playgrounds in connection with the public schools. Another feature of the educational work was a training course for school and public health nurses. The trained nurse in France was an unknown quantity. In order to carry on public health work it was necessary to have public health nurses so it devolved upon them to train women for this work. They had organized a training school which was meeting with great success.

Dr. Grulee described the many difficulties that beset them in their work of organizing dispensaries and hospitals and the various ingenious methods by which they were met. The French children that they handled belonged to 3 classes: 1. Those refugees coming from the occupied territory, through Switzerland and Evian. 2. The children of Lyons, and the problem these children created could be understood when one stopped to think of the immense increase in the population of that city and the overcrowding that resulted from the rush into the munition factories. 3. There were the refugees from Paris, for practically every child was removed from Paris during the period when that city was being bombed by "Big Bertha." The children coming from all these sources made the work of all their institutions very heavy.

As showing the need for educational work, Dr. Grulee stated that the French people knew nothing of the value of fresh air and that it would be impossible to exaggerate the frightful condition of the teeth of the French children. There was a peculiar feature in the psychology of the French, however, and that was that they would sit for 2 hours listening to a lecture on a health subject, and never seemed to tire of it. The work of the dentists became the most popular branch of the Red Cross work in Lyons, their dentist caring for the teeth of 30 or 40 children daily.

In closing Dr. Grulee said that he felt confident that much of the work started during the war in France would become a permanent part of their public health activities.

THE ARTIFICIAL FEEDING OF ATHREPTIC INFANTS.

Dr. W. McKim Marriott, of St. Louis, presented this communication in which he used the term "athrepsia" in reference to that well known condition of extreme malnutrition of infants known as marasmus, or infantile atrophy. The condition of athrepsia was a condition of virtual starvation in which the volume flow of the blood was diminished. This diminished flow of the blood was dependent, in part at least, upon a decreased blood volume, seemingly the result of a decreased protein content of the plasma, and consequent inability of the blood to maintain its water content. Very considerable amounts of food were indicated to meet this condition, yet the tolerance of many of these children for food was low, and digestion and absorption were necessarily poor. The tolerance of the infant for food might be increased by the use of gum acacia saline mixture intravenously, as the writer showed in the Proceedings of the American Pediatric Society for 1919. The problem still remained of providing a food containing the elements essential to nutrition and which could be fed in large amounts without causing gastrointestinal disturbances. In cases in which breast milk was not available, the use of lactic acid milk could be taken in larger amounts than sweet milk. They had come to regard butter-milk and protein milk as their chief reliance in the feeding of infants with gastrointestinal disturbances. Fat-free lactic acid milk, however, was low in caloric value. The caloric value might be increased by the addition of sugar and starch, but even when enriched by sugar addition it was not particularly adapted to the feeding of athreptic infants particularly those under 3 months of age. There was no reason a priori why the fat should all be removed from lactic acid milk. In order to furnish the additional carbohydrates required by these athreptic infants, they had employed the dextrins and glucose, the latter being absorbed with great rapidity. Glucose was very readily fermentable and hence had not been used extensively in infant feeding. The dextrins, on the other hand, were not readily fermentable. It therefore seemed that commercial glucose, otherwise known as corn syrup, being a mixture of dextrin, glucose and maltose, might be suitable for the purpose. They had added carbohydrate in the form of corn syrup to the whole lactic acid milk and used it in feeding athreptic infants, and the results were as would have been anticipated. There was no tendency to diarrhea, even when as much as 10 per cent. of the carbohydrate was added. There seemed to be almost no limit to the amount of carbohydrate that could be added to such a milk mixture. In addition a 5 per cent. solution of corn syrup might be given between feedings almost ad lib, as a means of supplying further calories. The thick syrup was rather inconvenient to handle and could best be used in a solution containing 50 per cent. carbohydrate. As such a mixture was thick, a nipple with a large hole must be used in feeding. Up to the present time the writer had fed 40 infants varying in age from 1½ months to 18 months, from periods of 4 days to 8 weeks. The amount of carbohydrate added varied from 10 to 15 per cent. A gain in weight was noted in these children, when a sufficient caloric intake was reached, and generally continued steadily for days and weeks interrupted only by acute infections. Few infants, whose weight was as low as 50 per cent. of the normal weight for the age, gained on less than 160 calories per kilo and many required 200 calories or more. The gain in weight in these infants was not due to a process of "water logging." There was no tendency to edema and none of the excessive flabbiness observed in condensed milk babies. It might be noted that although the food described contained a high percentage of carbohydrates it was also high in protein and fat, the relative proportions being not unlike those of ordinary milk mixtures. This mixture, as described, contained from 25 to 30 calories per ounce.

In concluding, Dr. Marriott emphasized the fact that he did not consider this type of feeding a panacea for infants—it was simply a type of food that enabled one to administer a considerable amount of nourishment in an easily assimilable form.

Discussion.—Dr. Fritz B. Talbot, of Boston, said that this paper gave food for a great deal of thought. One point brought out was that children underweight required more calories than normal children of the same age. That statement was borne out in their work on basal metabolism. It was a point often overlooked in the past because of the teaching they had. There was one point of which Dr. Marriott neglected to speak and was that the majority of marantic children had a subnormal temperature and that if the temperature could be restored to normal they would begin to gain. It seemed that children of this type were very tolerant of sugar but there were certain babies of this class that required close watching when they were getting a high percentage of sugar, for they might get diarrhea so that one had to be very careful not to overdo the sugar. Dr. Marriott had been using another type of sugar and perhaps these babies would tolerate a higher percentage of this than of the types ordinarily given.

Dr. Alfred F. Hess, of New York, stated that about a year and a half ago he had had the opportunity of feeding some children on corn sugar. At that time there was a great scarcity of sugar and the Division of Chemistry of the Department of Agriculture asked him to find out about corn sugar. They tried feeding 12 infants with 5 per cent. corn sugar instead of cane sugar. These children ranged in age from 2 months to 1 year and were kept on the corn sugar for 2 months. They all did exceedingly well. He had delayed publishing the results. Then there was no longer a shortage of sugar and they went back to cane sugar. Dr. Marriott had raised the question whether corn sugar was absorbed better than cane sugar. If it could be shown that it was absorbed more readily it would of course be of great value and that knowledge could be obtained by metabolic experiments.

Dr. J. P. Crozer Griffith, of Philadelphia, said he had asked the chief resident physician of the Children's Hospital in Philadelphia if he had to choose one kind of diet for infants what he would choose and he had replied butter-milk. That meant the common butter-milk mixtures. He was glad to hear Dr. Marriott's paper corroborate that experience. He also agreed with Dr. Marriott as to the ability of children to take a high percentage of sugar. He confessed, however, that he would have had a little fear of percentages of sugar as high as those Dr. Marriott had given; his experience indicated however that perhaps the sugar tolerance of children was greater than they had supposed. As to the butter-milk mixtures, it was often difficult to have mothers prepare these properly because they required very careful judgement. Hence he had tried in various ways to get away from butter-milk by making a milk of the same composition, but he found that it did not work as well as the butter-milk; this was evidently due to the presence of lactic acid. There was another point about which they might think, and that was that they had been guided by Finkelstein who held that fat could be tolerated if the protein was reduced and that was his idea.

Dr. Charles Gilmore Kerley, of New York, said that Dr. Marriott's paper had impressed him very favorably indeed. He had used a great deal of lactic acid milk, largely fat free or with a very low percentage of fat, in intestinal disorders when the intestinal disorders were of a kind requiring it. He would not, however, have had the courage to use sugar in the strength that Dr. Marriott had done. He would try higher percentages and would be much interested in getting at the truth since carbohydrate was very necessary in these very marked cases of malnutrition in little babies. He had given quite a high percentage of carbohydrates by using the polycarbohydrates in the form of starch and barley. His procedure had been to use unsweetened evaporated or condensed milk, cooked with starch or barley, and then sugar added.

Dr. Lewis W. Hill, of Boston, said that he had felt for some time that one of the most important things in infant feeding was the proper use of the carbohydrates, particularly sugar. He felt that too little sugar was being given on account of fear of fermentation of the Finkelstein type. He was very glad to hear Dr. Kerley speak as he did, for he had been doing the same thing and had wondered whether he was right or wrong. Some years ago, Dr. Talbot and he increased gradually the amount of carbohydrate without changing the other food and they found that the higher carbohydrate intake increased the nitrogen and salt retention and he believed this was because the carbohydrate acted as a nitrogen sparer. He had fed rather low proteins, just enough to cover the needs of the body, and had supplied the requisite number of calories by mixed dextrose and maltose.

Dr. Langley Porter, of San Francisco, said he had found that babies could take 10, 12, or 14 per cent. carbohydrate and would show a gain in weight not due to water retention. He believed that there was a type of infant with an alkaline intestine which needed a large amount of carbohydrate. Such babies were likely to be constipated and might be kept on a high percentage of sugar until they gained or had diarrhea.

Dr. T. C. McCleave, of Oakland, Cal., said he had been pondering for some time as to how to increase the amount of carbohydrate that could be given to certain types of infants. In some instances it seemed this could be done by the particular type of feeding that Dr. Marriott had described. He would like to know about the intervals of feeding and to suggest that possibly the secret of giving a large amount of fat in these cases was dependent upon the particular combination of sugar given, namely 55 per cent. dextrose, 35 per cent. maltose, and 15 per cent. glucose. The glucose was almost immediately absorbed, the maltose a little later and the dextrose later still, and in this probably lay the explanation of the fact that such large amounts could be taken care of.

Dr. Marriott said the point had been raised in regard to the subnormal temperature and the fact that the children did better after the temperature became normal. He had mentioned that in speaking of the pathogenesis of the condition, calling attention to the fact that with the diminished volume flow there was a fall in temperature and the sub-normal temperature tended to disappear when the volume flow of the blood increased.

As to the preparation of the butter-milk, the method they had found very convenient was to boil, cool, and inoculate the milk, and then put it in a thermos bottle. The corn syrup was made up in a 50 per cent. solution and this made a thin syrup that could be mixed easily. The feeding intervals were about 4 hours, 6 feedings in 24 hours, this making about 280 calories per kilo. They were quite elastic, however, in regard to the feeding interval and one could do pretty much as he liked about it.

Speaking of the influence of carbohydrates on the fat, Dr. Marriott stated that this acted in 2 ways. It aided the absorption of the fat in the intestinal tract and it was an advantage in internal metabolism. He found that the fats were taken well and had no trouble with acetone bodies when the butter-milk was fed with a certain percentage of fat in it.

Possibly these children might develop diarrhea, so it was his custom to have all stools saved and if an infant had a loose stool he had the nurse call him and he stopped the high carbohydrates at once before any harm was done. In some infants he had watched 8 or 9 weeks for the appearance of loose stools, when they were on this diet, and no disturbance occurred.

THE DELETERIOUS EFFECT OF THE ALKALINIZATION OF INFANTS' FOOD.

Dr. Alfred F. Hess, of New York, said that in the preparation of infants' food no regard was paid to its reaction, and such substances as sodium bicarbonate were added without thought in this regard. The same was true as regarded proprietary foods. Most of these were of alkaline reaction, some of them in high degree. Dr. Hess found that the antiscorbutic vitamine was peculiarly sensitive to an alkaline reaction and rapidly deteriorated in milk which had been rendered alkaline. He attributed the frequent occurrence of infantile scurvy on malt soup preparations to the potassium carbonate which it contained. Experiments on animals seemed to confirm his conclusions. He suggested that potassium citrate be used by the manufacturers of proprietary foods instead of the alkaline potassium carbonate. He also suggested that this question of reaction might play an important rôle as regards other vitamines, and that it might not be innocuous that cod liver oil was rendered alkaline in the preparation of the emulsions commonly employed.

Discussion—Dr. Julius H. Hess, of Chicago, said that when Keller gave his formula he warned against feeding it for too long periods on account of the danger of scurvy. He had prescribed this kind of a formula and the babies did well and perhaps did not come back for 3 or 4 months and then it would be found that they had developed scurvy in a considerable percentage of such cases. He had also seen scurvy develop on other proprietary foods and hence in prescribing a food of that kind the warning must be given that it cannot be continued indefinitely.

Dr. Charles Gilmore Kerley, of New York, said that one criticism of the paper was that things had worked out altogether too successfully and the proofs were too definite. They did not have difficult feeding problems settled quite so readily. He stated that they had been feeding alkalinized foods for many years and yet they saw scurvy only occasionally. They saw scurvy with cooked milk products and not with fresh milk products, so he felt that the case against the alkalinization of food, as far as interfering with the vitamine content, had yet considerable to be said about it. As to the use of malt soup causing scurvy, he felt that Dr. Hess was right. He would not think of feeding on malt soup mixtures without the use of orange juice at the same time, because with this type of food there was a tendency to the production of scurvy more than by any other type of feeding that he had encountered. There were proprietary foods on the market that were alkalinized and had been used for years and he felt that if the alkalinization was as much a factor as had been represented they would have seen much more scurvy than they had seen.

Dr. J. P. Crozer Griffith, of Philadelphia, recalled a report of the American Pediatric Society, made some years ago, in which it was shown that certain proprietary foods produced scurvy. At that time the manufacturers of these products claimed that it was not the proprietary foods but the boiled milk with which they were prepared that was responsible for the scurvy. It was true that the feeding of certain proprietary foods was followed by scurvy but that did not warrant the conclusion that because scurvy followed a certain type of feeding that food was not to be employed. He could recall as many as 10 cases of scurvy in breast fed infants yet he would hardly like to say that breast milk produced scurvy. He felt that as yet we did not have sufficient knowledge on this point to state that the alkalinization of food was responsible for scurvy, for if that were true he thought they would be seeing scurvy all the time, whereas they saw it but rarely.

Dr. Lewis W. Hill, of Boston, said that certain proprietary foods were only given for the purpose of increasing the amount of carbohydrate and that if one added orange juice there was no reason why their use could not be continued where they were indicated in order to increase the amount of carbohydrate.

Dr. E. V. Davis, of Chicago, said she wished to protest against the condemnation of malt sugar because it was sold as a proprietary food. She had tested these foods out and found that they did not produce scurvy, if they were not fed for too long a time. At the age of 6, 7, or 8 months, orange juice, carrots, etc., could be added to the diet to supply the necessary vitamines. Dr. Davis said that about 6 months ago her attention was directed to the statement that adding soda to beans killed the vitamines and she had, as they were feeding the children bean soup, ordered the soda stopped. She thought the question was still open and deserving of discussion.

Dr. E. C. Fleischner, of San Francisco, said they were losing track of the question before them. The question to be discussed was not the etiology of scurvy. No one could doubt that a certain fixed amount of raw cows' milk could keep an infant free from scurvy. It had been demonstrated that it was the vitamine that prevented scurvy and the question was whether alkalines could destroy a sufficient amount of vitamine in the milk and thus produce scurvy, though only in a mild state. They all knew that a highly alkaline food could be used if they gave a sufficiently large amount of milk so that there was still enough vitamine present to prevent scurvy.

Dr. Alfred F. Hess, of New York, said he was glad the subject had proven so interesting. As he remembered, the first speaker stated that he had never seen scurvy produced by malt soup. He thought Dr. Kerley had answered that question. While he could not explain it, the fact remained that if one put 100 babies on malt soup one would get almost 100 cases of scurvy. He did not mean by that active cases, but simply mild cases with pallor, petechial spots, and tenderness of the femur.

Someone brought up the question of dry food. He did not think that drying food was the cause of scurvy because recently he had shown that dry milk, subjected to high temperatures, still retained antiscorbutic properties.

RELIEF WORK IN FRANCE.

Dr. W. R. Ramsey, of St. Paul, who had just arrived in this country after having been engaged in relief work in France for a year, made this presentation. He said that when he arrived in France a year ago conditions were still bad and the refugees were arriving in great numbers. He had first organized a dispensary in Paris and then in the sector of which Rouen was the center. In that sector they had from 5-10,000 Belgian refugees and from 25-35,000 French refugees. As a result, the population of Rouen was intensely congested and housing provisions were totally inadequate as many of the buildings were old, some being of the sixteenth century style. His first undertaking here was the establishment of a central dispensary in which he insisted upon having a French personnel. He soon found that these children were not in need of medicine, but that they were very badly nourished, that there were many cases of impetigo, lice, etc., and the mortality among young children was enormous. He went to the Mayor of Rouen and got a list of the new born infants and undertook their supervision. They made it a point to send a postal to the father at the front every day telling him how his wife and family were getting on. He found that his great need was social service workers. Those that he had said it was difficult to make much headway because of the midwives, which in that locality delivered about 90 percent. of the women. Some of these midwives were extremely good, some were indifferent and some were extremely bad. He sought out the president of their organization, who was a rather intelligent woman, and through her succeeded in gaining the cooperation of the entire organization. He also organized a school for social service workers. Dr. Ramsey described how he succeeded in enlisting the interest and cooperation of the girls in the factories and that of religious workers. By awakening this interest on the part of local authorities and local agencies and organizations, he had succeeded in meeting the expenses incident to the work with very little help from the Red Cross. As things were when he arrived, women were only allowed to go to the maternity hospital for 8 days, so he set about organizing a maternity hospital, furnished the institution and in a modern way, and kept the mothers for a month before and a month after accouchement.

The emergency organization had now become a permanent one in the prefecture and included a model clinic for children, prenatal clinic for prospective mothers, dental clinic, school for social service workers, courses for midwives, school teachers and students maternity hospital, capable of eventually accommodating 1,600, school for children accompanying prospective mothers, children's hospital with 100 beds and a model dairy farm that provided fresh milk and other nourishing food for children and mothers.

The success of the Red Cross plan has prompted the city of Rouen to place social workers in all its hospitals, dispensaries, public schools and normal schools and to provide playgrounds at all the primary schools. Additional dental clinics for the children are also to be established. The numerous requests from other parts of France for information concerning the plan indicate, according to officials of the Department, that the system may be adopted with slight modifications throughout France.

HEMANGIOENDOTHELIO-SARCOMA OF THE LIVER: A DISEASE OF EARLY LIFE.

Dr. John A. Foote, of Washington, D. C., presented this communication in which he stated that he had recently reported a case of hemangioendothelioma of the liver in an infant, and cited 4 others previously reported. A study also of the histories of a number of so-called primary hemangiosarcomas of the liver in infants led him to the conclusion that some of these at least were really hemangioendotheliomas and should be so classified. Because of the confusion in terminology, and since, according to Adami, the actively growing tumors of transitional lepidic character had also from this standpoint to be considered as sarcomatous, the writer had suggested that all malignant hemangiomas of this type be called hemangioendothelio-sarcoma. The writer summed up the information gained from the study of 10 cases from which he concluded that hemangioendothelio-sarcoma of the liver was a congenital disease manifesting itself by an enlargement of the liver and some digestive disturbances within 3 months after birth, and caused by rapid and unrestrained proliferation of the endothelium of the liver capillaries leading to the formation of nodules on the surface of and within the liver with a rapid and progressive increase in the size of that organ. A fatal termination usually occurred before the sixth month as a result of pressure and obliteration of liver tissue. Jaundice and ascites were not usually observed and metastases were not found. The liver was purplish in color, studded with nodules, varying in size from a millet seed to an egg. Some of the nodules were confluent. These nodules were lighter in color than the surrounding tissue, and were also seen throughout the liver in cut sections, as dark red in the center surrounded by a lighter colored ring. Histologically the liver showed an infiltration of the more normal areas with small round cells. In places the liver cells were distorted, atrophied and vacuolated. The interlobular connective tissue was increased. The smaller blood vessels were choked with large endothelial cells, some showing mitotic figures. The nodules were surrounded with a fibrous area of compressed liver tissue. In some places this fibrous band showed laminæ containing degenerated liver cells. The larger nodules were packed with large, round or irregular cells, with large nuclei, some areas resembling myxosarcoma. Giant cells and neutrophiles were also seen in some areas. Hemorrhagic areas were also noticeable in some fields.

A summary of the 10 cases showed no history of malignant disease of the liver in the parents in any given case. No peculiarities of note occurred during pregnancy or parturition. The children were all breast fed in the beginning. All were well nourished, but developed digestive troubles and constipation later. In some cases liver enlargement was not noted until the patient was brought to the hospital. In 2 cases the growth was noted at 3 weeks, in 2 at 6 weeks, and in the others at varying periods up to 16 weeks. In addition to enlargement of the abdomen all cases suffered from constipation. Disturbances of digestion occurred shortly before or after the third month.

OBSERVATIONS ON THE CEREBROSPINAL FLUID OF ACUTE DISEASE.

Drs. W. W. Herrick, of New York, and A. M. Dannenberg, of Philadelphia, presented this communication which consisted in a study of the meningeal-choroidal complex in relation to miscellaneous acute diseases, other than meningitis and poliomyelitis. After reviewing well known facts in connection with the anatomy, physiology and pathology, the significance of the clinical complex and its reactions were considered.

Headache, irritability, hyperesthesia, exaggerated reflex activity and delirium were inaugural features of perhaps the majority of acute infections of any degree of severity. Only when these symptoms were prolonged and severe did they ordinarily attract attention. The recorded determinations of globulin, cell counts, etc., in cases of meningismus were surprisingly few.

The cerebral fluid of pneumonia had been fairly well studied by Voisin. Others had found pleocytosis, globulin increase and pressure changes in isolated examples, or rarely in a small series of cases of scarlet fever, mumps, enteric fever, pertussis, measles, rabies, diphtheria, sepsis with or without meningismus.

The present communication was based upon an examination of over 100 miscellaneous medical conditions with symptoms of meningeal irritation coming under the observation of the writers. They had correlated their findings with other clinical and laboratory features of the diseases studied—as temperature, leucocytosis in the blood, degree of meningeal irritation, and prognosis. No very direct relation of the reaction of the subarachnoid system to any of these features was apparent.

Twelve cases of lobar pneumonia were examined, 7 of which gave a cellular reaction in the cerebrospinal fluid of from 12 to 200 cells; 8 showed a globulin increase.

In 14 cases of bronchopneumonia, 5 had pleocytosis and a cell count of from 12 to 50 cells. Of 14 cases of influenza, 5 showed from 14 to 40 cells. Only 3 showed a globulin increase. Three cases of follicular tonsillitis had pleocytosis, 1 showing 172 cells. Of 28 acute medical conditions, 17 showed pleocytosis of the spinal fluid and 4 showed a globulin increase. Among these conditions there were cases of sepsis, scarlet fever, smallpox and measles.

The writers concluded, from a review of the literature and their personal study of 76 cases not resulting in meningitis, that beyond question the cerebrospinal fluid often gave evidence in the way of increased pressure, pleocytosis, and heightened globulin content of a reaction on the part of the leptomeninges to the infective agents or toxins of a large number of miscellaneous acute diseases, not ordinarily causing true meningitis. These diseases were bronchopneumonia, influenza, tonsillitis; the exanthemata, scarlet fever, measles, variola; herpes zoster, parotitis. enteric fever, sepsis, arthritis, pleurisy, migraine, reaction to typhoid inoculation and others. The cerbrospinal fluid showed variations from the normal in about one-third of the cases studied. Most, though by no means all, of the cases with subarachnoid reaction had clinical meningismus (meningitis serosa Dupré).

On the other hand many examples of meningismus were without pronounced changes in the cerebrospinal fluid. In making a diagnosis of meningitis or poliomyelitis from fever, meningismus and the changes on the cerebrospinal fluid mentioned, the greatest caution should be used. Cases with a cell count of less than 100 should be regarded with skepticism, unless clinical, epidemiological or other laboratory evidence was decisive.

QUANTITATIVE AND QUALITATIVE CHANGES IN THE SPINAL FLUID AND THEIR SIGNIFICANCE.

Dr. Abraham Levinson, of Chicago, read this paper in which he discussed the attempts in literature to explain changes in the cerebrospinal fluid on the basis of acidosis. He reviewed the present knowledge of the chemical and physico-chemical nature of normal spinal fluid and those taking place in disease, more particularly meningism and the various forms of meningitis. He also discussed the electrical change of cerebrospinal fluid protein, the hydrogen-ion concentration and the alkaline reserve. From the data presented he concluded that the changes in the cerebrospinal fluid in various diseases could not be generalized, since each disease presented at least some changes peculiar to itself. Any classification of cerebrospinal fluid changes must take into consideration both quantitative and qualitative changes. There were three types of conditions that produced changes in the cerebrospinal fluid, namely, meningism, meningitis, and systemic disturbances. The meningismal changes manifested themselves in an increase in pressure and amount of fluid. Occasionally there were also chemical and cytological changes. There was no evidence of acidosis in the cerebrospinal fluid of meningism. The mode of production of meningism was mechanical, being due to an increase in blood pressure in the cranium and decrease in the absorption of the cerebrospinal fluid. Changes in the cerebrospinal fluid of various forms of meningitis differed from each other not only bacteriologically and cytologically but also physically, chemically and physico-chemically. The cytological, chemical and physico-chemical differences in the various forms of meningitis were both quantitative and qualitative. The hydrogen-ion concentration of the fluid of suppurative meningitis was increased. The hydrogen-ion concentration of the fluid of tuberculous meningitis ran parallel with that of normal fluid.

One of the best indicators of the presence of a meningitic process, as distinguished from that of meningism, was the presence of sediment in the fluid. The systemic changes in the cerebrospinal fluid were encountered during the course of metabolic diseases and manifested themselves in an increase of certain chemical constituents in the fluid such as chlorides in nephritis and sugar in diabetes. The various types of changes in the cerebrospinal fluids could be utilized for the diagnosis of various diseases. A useful diagnostic means for differentiation between the various types of meningitis was afforded by the behavior of the fluid toward various precipitants, such as alkaloidal and metallic precipitants.

Discussion—Dr. Charles Gilmore Kerley, of New York, said he was sure the Section felt much indebted to Dr. Herrick for having left his own Section and come to them to present this highly scientific paper which was the result of so much work and observation. The paper was very valuable in that it established something definite in their knowledge of the relation of pathogenesis to the cerebrospinal fluid. They knew that there was an increased cell count and a positive globulin count in pneumonia, scarlet fever and mumps. In many other conditions the cell count was very indefinite. This work gave something that they could put down as real knowledge. The finding of a cell count of 172 in tonsillitis, 200 in pneumonia and over 40 in a large number of other disorders determined a point of value in regard to the diagnosis of poliomyelitis. It had shown that in order to be a determining factor in a large variety of meningeal conditions we must have a much larger cell count than we had hitherto thought was necessary. In the late epidemic of poliomyelitis, the idea gained credence that with a cell count of 10 or over the diagnosis was established. A case of tonsillitis with a cell count of 173 would have been landed in the poliomyelitis hospital. During the epidemic there was no doubt that many mistakes in diagnosis were made because of the lack of just this knowledge which Dr. Herrick had presented. There were a large number of cases in 1916 in which the diagnosis centered about the finding of a cell count of 15 or 20 or whatever number was determined upon. All the New York men would corroborate this statement. He had seen one boy with a pancarditis, with an endocarditis and a pericarditis, and the health officer found that he had a cell count of

18 and the case was diagnosed as one of poliomyelitis. The cell count in connection with the diagnosis of borderline cases in meningeal conditions had been the subject of very conflicting statements in the literature. In relation to meningism, it was supposed that the cell count of the cerebrospinal fluid was absolutely normal yet it had been found that in meningismus there might be a cell count of from 10 to 12 up to 100. Hence he felt that this paper of Dr. Herrick's was one of the most valuable pieces of literature that had come out of the war.

Dr. Isaac A. Abt, of Chicago, said he had very little to add. Dr. Levinson had opened up a new and very fertile field for they had just begun to study the chemistry, bacteriology, etc., of the cerebrospinal fluid and there was a great deal to be learned. He felt that the question of the value of cell counts had not yet been settled. With reference to meningismus they ought first to define what we meant by that term for they all saw cases of definite meningismus in typhoid fever and other cases and later the symptoms of meningismus disappeared and the disease ran its course. This was true of pneumonia. In these cases the spinal fluid presented some slight and insignificant changes but never the changes found in true meningitis. The point made was that the spinal fluid was a body fluid and reflected just what was going on in the organism. If there were toxins produced as the result of uremia or if large quantities of sugar were being produced, these conditions were shown in the spinal fluid just as in other fluids of the body.

Dr. W. R. Ramsey, of St. Paul, said he had not heard for many years a paper so beneficial as both of these papers were. They demonstrated what we had supposed for several years, namely that there was increased intracranial pressure both where we found real bacterial infection and where we did not.

Dr. Ramsey recalled that during the epidemic of poliomyelitis, which had become epidemic in Norway and Sweden first, the doctors did not know with what they were dealing as they demonstrated a variety of forms of poliomyelitis. Some cases had all symptoms of a severe meningitis and after removing the cerebrospinal fluid, which was under pressure, they became normal at once. The spinal fluid was sterile and the question arose as to whether that was a form of poliomyelitis or whether the signs were simply produced as the result of pressure. The most practical point was that in all kinds of cases one might get increased pressure. He could even recall a case of measles in which all the symptoms of meningitis were present.

Dr. Alfred F. Hess, of New York, said that certainly the most interesting part of this discussion had been the question of meningismus which had bothered clinicans for many years. Upon this question the 2 papers differed absolutely. The first paper found spinal fluid changes in meningismus and the latter paper found no such cell and chemical changes. In view of this difference it might be worth while to mention a few points in connection with the work of the Bureau of Laboratories of New York City. Here Dr. Neal had been doing the work for 6 or 7 years and the results might be summarized by saying that of 600 or 700 cases during the past 6 or 7 years, in which lumbar puncture was carried out and the fluids studied, there were many in which the diagnosis of meningitis was not established. In almost all these cases of meningismus, the cell count was found to be normal and the chemical examination was normal except under certain circumstances as in convulsions, especially in whooping cough and where there was a suppurative condition near the meninges, as in otitis media. In chronic cases, going a week or 10 days, changes occurred and he felt therefore that the classification should be arranged on the basis of acute and chronic cases. He wished to make the point that the acute cases running 1 or 2 days had one kind of a cell count and those running a week or more had a cell count resembling that of meningitis.

Dr. H. L. F. Locke, of Hartford, Conn., stated that in meningismus they had found that the spinal fluid changes were minor in character, but where puncture was delayed 5, 6 or 7 days a moderate increase would be found in the number of cells and in the amount of globulin. The reason was that cerebrospinal congestion delayed absorption and the longer these cases went without puncture the more apt was one to find changes in the cerebrospinal fluid.

Dr. Herman Schwarz, of New York, said he was very much surprised that if puncture was done early a cell count of 170 should have been found in tonsillitis. He would be glad to hear more on that point. He would like to be shown that a cell count of 60 or 70 was not of some value. Usually when one found sugar in the blood there would be an increase of sugar in the cerebrospinal fluid and in most cases in which there was a real inflammatory condition of the brain there would be an increase of sugar in the spinal fluid.

DR. FRITZ B. TALBOT, of Boston, stated that there was one point that these papers brought out very clearly and that was that they did not make the mistake in this phase of medicine as in all other phases, namely, that of first studying the pathology instead of studying the normal. It was very encouraging to see so much normal data being recorded and it was to be hoped that this tendency would continue.

DR. MORSE, of New Haven, said that in cases of meningitis they had made blood cultures early and found the cultures positive in a considerable number of cases. That led them to make lumbar punctures and to culture the cerebrospinal fluid. As a result of this procedure they found the meningococci in a considerable number of cases and in some cases which did not show meningeal symptoms. This led him to suggest that possibly the organisms might get into the spinal fluid in a greater number of instances than they had recognized and without setting up inflammatory changes, which could be recognized grossly, there might be a response in the cells.

DR. A. M. DANNENBERG, of Philadelphia, in reply to the question as to whether the spinal fluids in their cases were examined early or later on, said he wished to state that all were done immediately on the entrance of the patient into the hospital, in from 15 minutes to 1 hour. Of course, in a case of acute tonsillitis, the patient might have been in the hospital for several days before the puncture was done. This article was an afterthought. It was not contemplated at the time the work was being done. They had quite a number of lumbar punctures for supposed meningitis and when they found what a wealth of material they had they decided to publish it.

DR. HERRICK, in closing, said that English speaking physicians were behind those of France and Germany in the study of cerebrospinal fluid. These had shown that in a variety of acute infections there was a positive reaction as shown by the cerebrospinal fluid. In only about 30 per cent. of their cases of meningismus did they find changes in the spinal fluid; that left a considerable number without such reactions.

In regard to the question of finding organisms in the subarachnoid space in patients in the absence of symptoms of meningitis, there was a sequence of events that went something like this: there would first be a blood stream infection; then the organisms would get into the spinal fluid; next the cells would become mononuclear and then pus would form. Undoubtedly there was desquammation of the epithelial cells. The work of Dr. Levinson was interesting as pointing out that a study of the chemistry of the spinal fluid might be valuable in the diagnosis of a variety of conditions. In the last analysis, the diagnosis of infections depended upon finding the organism producing the infection. It might be that the increased pressure, as an inaugural feature in acute infections, was a defensive reaction in which the meninges and the choroidal plexus were consolidated thus shutting off the path by which infection might travel. The practical point was that cases with a cell count of less than 100 cells should not be regarded too seriously unless one could demonstrate the etiological agent concerned.

Dr. Levinson, in closing, said that the discussion had brought out the timeliness of facing 2 points. He believed that in medicine they were falling into a tendency to make generalizations and this should be avoided. Another point was that the time would come when they would not attempt to make a diagnosis between meningismus and meningitis simply by giving attention to the cytology but would also take into consideration the chemical and physico-chemical side. Until they could see the spinal fluid as a part of the normal organism, they would not reach the point they wanted to reach. The spinal fluid must be studied as any other body fluid, as it was regulated by all the factors that were regulating the blood stream. If the blood pressure in the cranium was increased, they must expect an increased spinal fluid pressure. The condition of the spinal fluid, as he had pointed out, was of value in the diagnosis of uremia, diabetes, and other conditions. They must not disregard the chemistry of the cerebrospinal fluid. In both their laboratory and clinical work they must take into consideration the cell count, the bacteriology, the chemistry, and the physico-chemistry of the cerebrospinal fluid, since there were certain specific reactions in certain diseases that were of value in reaching a diagnosis.

PNEUMONIA IN INFANCY AND CHILDHOOD WITHOUT PHYSICAL SIGNS.

Dr. Rowland G. Freeman, of New York, made this presentation which he illustrated with lantern slides. He stated that the question whether there could be a real pneumonia without physical signs had been discussed and this possibility was not definitely stated in textbooks. The best opinion was that in children a positive diagnosis could be made without the presence of physical signs in the chest, when there existed several of the following symptoms: fever, over-activity of the alae nasi, a pneumonic type of respiration and a pause at the end of inspiration accompanied by an expiratory grunt, a relation between respiration and pulse of approximately 1 to 3, rigidity of the lower extremities and an effort on the part of the child to protect a sore chest. Notwithstanding this, in consultation he had found men surprised when a diagnosis of pneumonia was made without physical signs. It was of great importance that the possibility of the existence of pneumonia without physical signs be recognized, especially in a child who had acquired a respiratory infection where the ears had been involved and where the temperature was persistently high and the question arose as to whether a mastoid operation should be done. Since the adoption of the use of the x-ray in hospital practice, pneumonia had been found where no physical signs of its existence had been discovered and even after its discovery by the x-ray the physical signs were not found. There was urgent need for an x-ray apparatus that could be used in private houses. Dr. Freeman cited 3 illustrative cases all of which showed approximately the same area of the right lung involved and the consolidation in none of the cases ran up to the apex. It might be considered an involvement of the right middle lobe; if, however, it was the right middle lobe it should be possible to obtain signs over the anterior portion of the chest. It seemed to him much more probable that the involvement was of the right upper lobe and that the signs were obscured because in order to hear them one would have to listen through the right scapula. It was not remarkable that no signs could be detected in the right axilla.

Discussion.—Dr. W. R. Ramsey, of St. Paul, said that there was no question but that in children pneumonia existed not infrequently without physical signs and it might go on to resolution without giving physical signs. These might be central pneumonias. Dr. Freeman mentioned one sign by which to recognize pneumonia without physical signs generally overlooked. By recognizing this sign he had been able to save a child from operation for appendicitis; this sign was the pause at the end of inspiration and the expiratory grunt. One seldom had pneumonia without this characteristic breathing.

Dr. Charles Gilmore Kerley, of New York, said that these cases were most instructive. They brought to mind that if a great many other diseases were subjected to the x-ray additional light might be thrown upon them. He had been making observations on persistent chronic gastrointestinal disorders and had learned that in these diseases unusual and unexpected conditions presented themselves.

Dr. Kerley asked Dr. Freeman if he noted a symptom-complex in those cases and if there was any characteristic symptomatology which would lead one to suspect or recognize these cases.

Dr. Laurence R. DeBuys, of New Orleans, stated that many cases of pneumonia went on to convalescence without any physical findings. This was due to the fact that consolidation did not extend to the hilus. His plan was whenever he found a clinical picture suggesting pneumonia he arrived at the diagnosis by a process of exclusion.

Dr. Frank X. Walls, of Chicago, said some one had asked with reference to the symptoms in these cases of pneumonia without physical signs. They had been observing a peculiar type of dyspnea. There were 2 types of dyspnea in children, that of asthmatic bronchitis and acidosis and that of pneumonia. They had observed a dyspnea apparently central in origin, associated with toxemia and pyrexia or hyperpyrexia. It had been their observation that dyspnea in pneumonia was a more or less stable condition, while the dyspnea of toxemia was variable and might disappear when the child was asleep. If a lasting dyspnea was present, not affected by sleep, it pointed to the existence of pneumonia. The respiratory symptoms had been ignored except by Dr. Hoover. If the attention were given to the respiratory symptoms that had been given to the circulatory symptoms interesting results might be obtained.

Dr. Godfrey R. Pisek, of New York, stated that if these cases of pneumonia, without physical signs, were carefully observed at stated periods one did get some physical signs. This question had been brought to their attention before and, in cases without physical signs that they thought might have pneumonia, they had watched closely and found that usually before the drop in temperature came, physical signs would be present for a few hours and then they would disappear.

Dr. Louis Fischer, of New York, said that as Dr. Freeman had stated the x-ray was not adapted to private work, but in addition to the x-ray and physical signs the differential blood count was of value in diagnosing pneumonia. In pneumonia one found a high polymorphonuclear and a high leucocyte count; the polymorphonuclear count running up to 70, 80 or 90 and in the absence of physical sings this would enable one to establish a probable diagnosis of pneumonia.

Dr. Freeman said that someone had suggested the possibility of pleurisy in these cases. If there had been a purulent exudate they would not have cleared up as quickly as they did. These cases were interesting because they did not look like pneumonia. There was no marked acceleration of the respiration. They had a high blood count but no other symptoms that one would expect to find with pneumonia. This was accounted for by the fact that they had a very small area involved. All of these cases were young infants which added to the difficulty of the diagnosis.

A COMPARATIVE STUDY OF THE EARLY AND LATE SECONDARY COMPLICATIONS OF INFLUENZA AND INFLUENZA PNEUMONIA, AS SEEN IN THE ARMY, WITH THOSE OF INFANTS AND CHILDREN IN CIVIL PRACTICE.

Dr. Julius H. Hess, of Chicago, presented this communication which was based on the replies to a questionnaire received from 45 teachers of diseases of children in practically all parts of the United States. There were in all data with reference to 3,117 cases. In the analysis they had divided these cases into 3 groups: 1, Private practice. 2, Hospital. 3, Institutional cases. The analysis included a comparison of the morbidity, nature and severity of complications in the adult, child and infant.

and of the relative severity and character of the pandemic in different sections of the United States and foreign countries, in children and infants.

A few of the many points brought out were that there was a tendency toward family contagion. In children there was less tendency toward serious complications than in adults in the same family. Leucocytosis was a prominent finding, there being as high as 2-4,000 cells per c.c. The blood pressure in uncomplicated influenza of moderate degree was systolic from 190 to 126. There was an average of 42 pulse pressure. Adults and children showed practically the same results in reference to blood pressure. The percentage of children developing pneumonia varied greatly. It seemed that children were more susceptible to pneumonia in the first wave and infants in the second. Children on the whole seemed to show a lower morbidity and mortality (15 to 56 per cent.). In the army the incidence averaged 15 to 25 per cent. The morbidity was higher during the second wave in private practice among the better classes, while the reverse was true in the lower classes. The most frequent complications were otitis media and empyema. The empyema occurred in the subscapular region in 1 or both lobes in 75 per cent. of the cases. All agreed that second attacks were rare. They, however, had had 3 distinct secondary attacks at the Michael Reese Hospital. Other complications discussed were laryngitis, epistaxis, and sinusitis. Severe jaundice had occurred in 1 per cent. of all cases, with swelling and induration of the liver. Cardiac deaths were frequent in adults. In most autopsies in soldiers the right heart was found dilated. Most reports stated that this finding was not common in children. Endocarditis was a rare complication. A considerable number of systolic murmurs were noted that were absolutely due to the epidemic. Emphysema was a rare complication in children. Some cases showed meningismus, with the cerebrospinal fluid under pressure, and a slight or moderate increase in globulin while the cell count rarely exceeded 50. Encephalitis was rare and was only seen late in the epidemic. Abdominal complicaitons, pseudo-appendicitis, and tympany were rare. A persistent cough was one of the most common complications. Severe secondary anemia and chronic forms of anemia were comparatively rare. Secondary anemia in soldiers was a rather common finding. Pulmonary tuberculosis had not been noted to date as following influenza. They had come to the conclusion that pulmonary tuberculosis was an infrequent complication, nevertheless, in the absence of marked changes the diagnosis of pulmonary tuberculosis could only be made by careful study. Among the hospital cases there were 1085 recorded, with a mortality of 9.2 per cent. In private practice the mortality among children was 2.4 per cent. and 4.83 per cent. among infants. The mortality of hospital cases was from 2 to 4 times as high. In well organized institutions the mortality had been exceptionally low.

The general impression from this study was that influenza in children was much less severe than in adults and that in private practice the prognosis was better than in hospitals. Pneumonia and secondary pneumonia in children was less severe than in adults. Influenza was a disease involving the respiratory system with a special predilection to the production of capillary bronchitis or lobar pneumonia.

ABSCESS OF THE LUNG IN CHILDREN.

Dr. Harry Wessler and Dr. Herman Schwarz, of New York. (See Archives of Pediatrics, April, 1919, p. 238.)

Discussion—Dr. T. C. McCleave, of Oakland, Cal., said that unfortunately during the epidemic he had not seen children with influenza, but he had seen young adults in camp. The first thing that struck them in the camps was the multiplicity of complications and the multiplicity of organisms that were encountered. A striking fact was that in the serious complications the infecting organism was usually the streptococcus and a streptococcus of the hemolyticus type in a large percentage of cases. Dr. Hess had referred to abdominal symptoms in influenza and other unusual complications. He had seen a peculiar complication, a psoas abscess which showed a pure culture of streptococcus hemolyticus. The man's illness had begun as an influenza case. He had been caring for his wife who had had typhoid fever, and paratyphoid organisms were found in his stools. It was thought that he had paratyphoid fever. He ran a septic temperature and ultimately this abscess pointed toward the greater trochanter. In another instance a man had a complicating mastoiditis and later a psoas abscess, followed by multiple abscesses. It was interesting to know that these conditions could occur and they might account for the prolongation of fever.

The matter of lung abscesses was also quite a problem and also the cases of empyema rupturing into the bronchi or causing a pyopneumothorax. He had had 2 cases of prolonged abscess of the lung that made a spontaneous recovery and he had had several cases of pyopneumothorax that were finally operated on and recovered just as a fresh empyema would have done. Dr. McCleave also cited 2 cases of lung abscess in which operation was advised and refused and they had pictured prolonged invalidism to these patients but they had made apparently good recoveries.

Dr. William Weston, of Columbia, S. C., stated that these cases of persistently consolidated lung that had followed influenza were interesting. Some of these cases suggested tuberculosis but the von Pirquet test was negative. Another point was in reference to cyanosis in cases of pneumonia following influenza. At Camp Benjamin Franklin most of these cases showed cyanosis, while at Camp Jackson the cases were mostly of type I and II pneumococci and did not show cyanosis. It was in the cases showing the type III pneumococcus and the streptococcus and staphylcoccus infections that cyanosis was shown. Infection with the staphylococcus gave physical signs and x-ray findings almost exactly like miliary tuberculosis.

Dr. Ernest Zueblin, of Cincinnati, said he had observed a girl of 6 years of age in their institution whose case was misdiagnosed as tuberculosis. There was no very definite history, but she ran an irregular temperature and there were a few signs over the base of the left lung, anteriorly and posteriorly. Finally an accumulation of fluid was detected and an x-ray taken. The fluid shifted when she changed position. Some was removed by aspiration and was found to contain the Pfeiffer bacillus. It was thought that vaccine therapy was indicated and that line of treatment was instituted. A peculiar abscess then developed along the lingual tongue. At postmortem 5 weeks later multiple abscesses were found in the left lower lobe of the lung, chiefly of peribronchial type. The bacillus could not be found. The question was raised as to what the primary cause of the trouble was and that he could not say. The case raised points in reference to physical signs, clinical symptoms, and therapy that were of interest. Dr. Zueblin asked Dr. Schwarz where the aspiration pneumonias were found.

Dr. Ellis Bonime, of New York, called attention to the blood picture in influenza. He said he thought a leucopenia the most important feature of the influenza epidemic, in so far as it created a different picture than they had had heretofore. They had been interested in the sputum pathology. Whereas the Pfeiffer bacillus was found frequently before the epidemic, they did not find it so frequently afterward. In a series of experiments by inoculation in the form of vaccines they had been able to produce a leucopenia. The reaction to the vaccines ran parallel to the amount of leucopenia produced.

Dr. John A. Foote, of Washington, D. C., said that, speaking in reference to Dr. Schwarz's paper, Dr. Richardson had called attention to an abscess of the lung following a tonsillectomy. It was rather easy to diagnose abscess of the lung after operation but not so easy in cases that occurred after pneumonia, whooping-cough or the convulsive cough following influenza. Even the x-ray was not always conclusive. In regard to the statement made by Dr. Schwarz that lobectomy was the procedure to follow; that was very radical. Dr. Tewkesbury, of Washington, had reported a number of cases successfully treated by artificial pneumothorax in which the abscesses were of considerable extent. It was true some of these cases might heal spontaneously. In those cases in which the x-ray showed extensive involvement possibly more could be accomplished by artificial pneumothorax than by lobectomy.

Dr. Langley Porter, of San Francisco, said there were 2 complications common in San Francisco which he remembered Dr. Hess had not mentioned as being common in his series of cases. One of these was laryngitis, which was a common complication in their children. The other complication was a painless otitis media. They saw about 350 cases of influenza in the first epidemic and 300 in the second. The second epidemic differed from the first in giving a larger percentage of morbidity among children than the first, and the most striking thing was this painless otitis media, which in most cases was of short duration.

Dr. Porter said he was glad the subject of abscess of the lung had been brought before them, because the cases that did not spontaneously clear up were so terribly appealing. He doubted very much if the cases to which Dr. Foote had referred were of that type. He had had a case with multiple bronchiectasis treated by means of artificial pneumothorax and one of abscess of the lung and both died of sepsis. He was interested in the statement that these cases of abscess of the lung might follow tonsillectomy. He had never seen a case of abscess of the lung follow a tonsillectomy. He wondered if it did not devolve upon Dr. Schwarz to prove that these cases were not due to emboli rather than to inhalation of infected material at the time of operation for tonsillectomy.

Dr. Julius H. Hess, of Chicago, said that many of the common complications of influenza, such as laryngitis and otitis media, he had passed over because they were so common. The otitis media was one of the most interesting things. About two-thirds of the cases of otitis were of the serous type. The ear drum would rupture of itself, while you were watching it, and the ears healed up readily, there being very little mastoiditis. There was very little suppurative ear trouble in the first wave of the epidemic; the serous otitis was the type most often seen at that time.

As to the hemorrhages that were so frequent, it was their belief that hemorrhage from one part of the body relieved the congestion in other places. Among the soldiers epistaxis was very common, occurring in about 20 per cent. of the severe cases of both pneumonia and influenza, and they had tried phlebotomy but very little benefit seemed to result.

They saw a large number of cases of pyelitis complicating influenza and some cases of acute nephritis with albumen and casts and the urine would clear up in from 48 to 96 hours after the temperature fell. Even if the cases had hemorrhage from the kidney and ran a prolonged course he had not seen chronic nephritis.

Dr. Schwarz, in closing, expressed the opinion that in the cases of lung abscess or bronchiectasis, artificial pneumothorax was distinctly harmful and the surgeons were opposed to doing it, and felt that in these conditions artificial pneumothorax was not the proper procedure. It seemed that if the lung abscesses, following tonsillectomy, were due to embolism they would occur within a few days following operation and would have a stormy onset. In these cases the symptoms were more like those observed when a foreign body was aspirated.

SOME CLINICAL EXPERIENCES IN THE TREATMENT OF CHILDREN WITH TUBERCULIN.

Dr. Richard Cole Newton, of Montclair, N. J., stated that his object was to answer the question as to whether tuberculin should be employed as a routine diagnostic measure for the detection of tuberculosis in weak and anemic children, and, if so, whether a positive response should be followed with tuberculin treatment. He discussed the technic to be employed in administering tuberculin to children and related a number of typical cases. He emphasized the point that children must be treated in the pretuberculous stage, if one hoped for permanent and brilliant results. In the eradication of tuberculosis in children lay the greatest prospect for the eradication of that disease from the people as a whole. Children, he stated, were more susceptible to tuberculin than adults. The cases cited demonstrated the advantages of the tuberculin treatment in early cases of tuberculosis in children. There was, however, no average dose of tuberculin for children; there was only an individual dose for children as for adults. Dr. Newton said he could not agree with those teachers who advised against the use of tuberculin in children because-of its psychological effect, for in his experience there had been no deleterious psychological effect. Treatment with tuberculin should be accompanied by all hygienic measures usually instituted in the treatment of tuberculous patients. The physician who had not learned to use tuberculin properly was certainly making a mistake. Every incipient case of tuberculosis in which he had used this agent had been restored to health.

Discussion.—Dr. Francis M. Pottenger, of Monrovia, Cal., stated that his conception of what went on in children so far as tuberculosis was concerned was that soon after birth infection occurred and then what happened next depended upon the resistance of the child and the amount of the dosage. If the dose of infection was small and the resistance was good, all what happened was an increased resistance. If the dosage was large, it nearly always caused an acute condition and death. If the dose was moderate and resistance was not good, the disease might make some headway and then it might quiet down to break out later on. In such cases tuberculosis acted as a deterrent influence and some measure should be adopted at once, and this was the group in which tuberculin was of the greatest value. This was particularly true in families in which tuberculosis was present, and in the children of such in whom there was a gradual weakening, lack of resistance, undernutrition, and an unstable nervous balance. For that group one could do a great deal if he would bear tuberculin in mind. He had taken many such children and put them on the usual dietetic and hygienic treatment, but he did not take them out of school. He tried to avoid making them invalids, as one was apt to do if the child was taken out of school and his attention concentrated on his physical condition. Then, in these children, he always gave tuberculin and as a rule he obtained good results. The child's response to tuberculin was much better before puberty than afterward. If one got these children and treated them with tuberculin before the age of 8 or 9 years the results were very good. Dr. Pottenger urged those who did not do so, to get into the habit of using tuberculin in these cases, for if they took these children in time a large part of the tuberculosis that occurred later on in life could be prevented.

Dr. Ellis Bonime, of New York, said that tuberculosis had a certain advantage over other conditions in that about 90 per cent. of the human race were immune of this disease. Even in families where some members died of the disease some of the other members of those families would be immune. Children in tuberculous families should be tested by the von Pirquet test every 6 months, and as soon as they showed a reaction there was no doubt but that they had the bacteria and were susceptible. In those cases a course of tuberculin treatment was absolutely indicated. He had not seen a case develop in such a child where tuberculin was given, even where there was a history of extensive tuberculosis in the family.

Dr. Fritz B. Talbot, of Boston, said he felt that the trend of this discussion was rather dangerous. His experience did not uphold the belief that there was any definite benefit from the administration of tuberculin in children. All children susceptible to tuberculosis might be treated by other means—fresh air, sunlight, rest and good food. It seemed to him that many of the claims of tuberculin might be due to these factors. There was a very dangerous element in giving tuberculin to children, because every one admitted that the dosage was a very important factor in determining tuberculous infection or tuberculous disease which were 2 quite different situations. The younger the child the more easily could a tuberculous infection become tuberculous disease. There was always the danger that the tuberculin might convert a latent into an active infection. If the claims being made for sunlight, as it was now being used in France in the treatment of tuberculosis, were substantiated it seemed that they might find in that an effective remedy and one which was much safer than tuberculin.

Dr. Abraham Levinson, of Chicago, said he did not care to discuss whether tuberculin was valuable or not, because he did not think we knew enough about it to warrant making any definite statements. Even if we admitted that tuberculin was valuable it seemed that as a procedure in the treatment of children it was dangerous in pulmonary tuberculosis. In some children, who were suffering from a glandular infection, a secondary infection occurred in the lungs and in such cases tuberculin was of value. He felt, however, that a warning should be sounded to those who used tuberculin in any form in children for he had seen cases on which he believed it had produced miliary tuberculosis, and miliary tuberculosis meant active tuberculosis that ended fatally in the form of tuberculous meningitis. He felt that tuberculin had been used injudiciously in some of the cases reported by Dr. Newton. He thought one of those cases was an advanced case of pulmonary tuberculosis. It was advisable not to be swept away by enthusiasm for this agent which might be helpful in some incipient cases, while in others it might light up a latent tuberculosis.

Dr. Newton, in closing, said that the great trouble was that the profession was so much afraid of tuberculin. They assumed much the same attitude toward tuberculin that they had assumed in regard to diphtheria antitoxin 30 years ago. He recalled that when his own child had diphtheria 30 years ago he said he did not want any doctor to experiment with the antitoxin in his family. Dr. Pottenger had told what cases were suitable for the tuberculin treatment and what it would do for these children. In coming before them he had told simply what he found. He thought the profession should be more open minded and should give tuberculin a trial and determine just what its limitations were.

RECENT DEVELOPMENTS IN OUTPATIENT WORK.

Dr. Charles Hendee Smith, of New York, stated that at Bellevue Hospital and Dispensary, somewhat different methods were being employed than in other institutions. Nearly every hospital divided its service into ward work and an outpatient department. These departments were usually quite distinct. The older and more experienced men had charge of the wards, while the younger and less experienced men did the work in the dispensaries. The result of this policy was very bad manning of the outpatient department and poor treatment for the patients.

In the wards of a hospital a child was often uncomfortable. The hospital did not provide the environment the child was accustomed to, and he was not contented. As a result they had largely acute cases in the children's wards of their hospitals, and indeed chronic conditions were not as a rule benefited by a long stay in the hospital, because of the environment which was not suited to the child accustomed to home life. It was in this class of cases that the outpatient department, properly organized and conducted, could be most effective and could give to children suffering from chronic conditions the care they needed without removing them from their homes.

The Children's Medical Division of Bellevue Hospital, under Dr. La Fétra, was organized in such a way that there was coordination and cooperation between the 2 branches of the service, the hospital wards and the dispensary, and these branches were considered of equal importance. A close connection between these 2 branches of the service was maintained by dividing the staff in such a way that the visiting staff were on duty a part of the time in the dispensary, and the physicians doing dispensary work had certain duties in the wards as well as in the outpatient department. The duties of the attending physicians were divided so that there were 2 or 3 in attendance on each ward. In this way each man had only to make rounds every other day and it gave the patients the advantage of having the oversight of 2 physicians and hence better care. Every effort had been made to save time and to eliminate unnecessary work by the methods of modern efficiency.

Every precaution was taken to protect the children from contagion, and the infants were separated from the older children. When a child came in, the assistants took the history, height, weight, and temperature. A physician then examined the child and in this way one physician could handle a great many children. Special cards were provided for recording the results of the examination, history and other data. They also had printed prescriptions which saved a great deal of time. The children were then classified according to their diseases into classes. There were cardiac classes, nutrition classes, syphilis classes, classes in infant feeding, tuberculosis, etc. This plan saved the physician tremendously and was a benefit to the patient. It saved the physician, because he could give instructions to a large number of mothers and children at one time and it helped the patients because the spirit of competition was aroused and each patient tried to excel others in the progress made. The physician also had the advantage of observing the comparison between different patients. Then again this work became known and attracted other patients and a larger number of children needing special care were reached. The school nurses knew of the work and directed many children to them. They had arranged the clinic so that each man did a different thing each day.

One of the most interesting of the classes was the cardiac class endowed by the late Dr. John H. Huddleston. It had been demonstrated that a great deal could be done for children with congenital cardiac conditions by improving their general physical condition and removing other physical defects. The undernutrition class included a large number of children. All of the classes had been successful except the vaginitis class with which they had not been altogether successful. They had had 50 cases contracted in the hospital and the fact that this condition was contracted in the hospitals so frequently made it incumbent on every hospital to have a class for these patients.

They used printed forms in all their work and he felt that this was the only way in which to get accurate records. Printed forms were also given to the patient, and mothers or guardians. In the application of this system they had found it possible to use the service of voluntary workers very effectively. They had no difficulty in getting these workers because they liked the human interest attached to the work.

Such a system was also of great value from the educational point of view. They had made arrangements by which this service was available for post-graduate instruction. They took a certain number of men and allowed them to spend their mornings in the wards, and their afternoons in the dispensary. Many men on their way home from military service were taking advantage of this opportunity to get an intensive course of this kind. They taught the internes to handle the mother and children which was an important feature in pediatric practice, and they educated the mothers in hygiene and in the proper feeding of infants and children. The pediatrist should recognize that the giving of such instruction to mothers was a most important part of his work and that it should be given to the mother of every child coming under his care.

Discussion.—Dr. John Lovett Morse, of Boston, said he had not read Dr. Smith's paper, but from what he had heard he thought they had everything in their work that Dr. Smith had mentioned with the exception of the class system. He congratulated Dr. Smith on his nutritional class but he said that was not all. The outpatient department of a hospital was of more value to the community than the wards. In their work they had a system by which the records of the out patient went to the wards when a patient was admitted to the wards from the dispensary and when a patient was discharged from the wards and referred to the dispensary his records went with him. Dr. Morse said he himself took a service in the outpatient department every year. They did a great deal of teaching in the outpatient department and gave the students the opportunity to learn about the milder diseases. Their social service department followed both the cases in the outpatient department and those in the hospital wards. He thought the number of vaginitis cases that Dr. Smith mentioned was rather large and that a hospital should take care that such cases did not develop among its patients.

Dr. Morse said he could not agree with Dr. Smith in his enthusiasm for the printed form, for the thought that if there was anything that prevented a man from getting a full history of a case, and doing his own thinking it was the printed form. It was all right to give printed forms to the mothers.

Dr. Langley Porter, of San Francisco, considered that it was somewhat of a reflection on their profession that only a dispensary class could have the benefit of such instruction as Dr. Smith had described. There was a large class of people between the dispensary class and those who were wealthy enough to have highly trained specialists who were in need of the kind of instruction and supervision which was available in such a dispensary class. The paper should be an inspiration to use such methods in their private practice, for one could follow along those lines in many respects in dealing with private patients.

Dr. Smith, in closing, thanked Dr. Morse for his discussion and stated that for 8 years he had used the printed forms in his private work and in various institutions. In every institution when he had suggested these, there were 40 or 50 per cent. of the men who raised the same objections to the system that Dr. Morse had raised. They said it was inelastic and doubted its efficiency in getting the history, but after they had used the forms for a time they would not do without them. The fact was that the printed form got the history in a way that the blank page did not succeed in doing.

RETROSPECT OF FIFTEEN YEARS' EXPERIENCE IN THE TREATMENT OF HYPERTROPHIC OBSTRUCTION IN INFANTS.

Dr. Langley Porter, of San Francisco, (See page 385).

Discussion.—Dr. Alfred A. Strauss, of Chicago, said he would not go into the history of the operative methods employed in hypertrophic pyloric obstruction, but he could not forebear calling attention to the fact that he was the author of the operation which bore Rammstedt's name. He had published his method before Rammstedt and called it pyloroplasty, describing 3 cases operated on by that method. He did a little differently from the procedure as described by Rammstedt in that, after having split the muscle layer down to the mucosa, he partially shelled out the tumor and then completely closed the incision. He had operated by this method on 142 cases and had lost only 3; 1 of these was moribund when operated upon, 1 died of embolism, and the third had atresia of the intestinal tract. The mortality of the Rammstedt operation was from 10 to 20 per cent., while the mortality by his plastic operation was 3 per cent. He had operated on 4 children by the Rammstedt operation and they all vomited afterward. The nurse had asked why these children vomited when the others did not. She did not know that there had been any different procedure followed in those operations. The children operated on by his method of pyloroplasty did not vomit following operation. An important factor in these cases was the employment of blood transfusion through the superior longitudinal sinus. Their rule as regarded operation was that if the stomach emptied in less than 4 hours they refused operation. In 80 or 90 per cent. of the cases the food passed through the pylorus in 2 hours and those cases were not subjected to operation, but were treated by the Sauer method.

Dr. Henry F. Helmholz, of Chicago, stated that they were continuing to use the medical treatment for this condition which they had recommended. Of course they had their failures and they had never put it out as a panacea for pyloric stenosis, but they felt that many cases could be cured by medical methods without resort to surgical interference. In regard to the point Dr. Strauss raised of operating after x-ray examination, he wished to say that such an x-ray examination should be made after the administration of ordinary milk mixtures and after the administration of the thick cereal mixtures. Frequently ordinary milk mixtures would be followed by 100 per cent. retention while the cereal mixtures would pass through the pylorus in less than 4 hours. He had recently seen 1 case in which the Rammstedt operation was done and continuous vomiting followed. The child died 3 days later. The vomiting in this case was just as explosive after the operation as before. By feeding the cereal gruels they could carry some of these cases through the critical period without an operation.

Dr. Harry Lowenberg, of Philadelphia, thought it would be better if they stopped speaking about spasm and hypertrophy. The question was whether the food was passing through the pylorus. It would be better to speak of these cases as surgical and non-surgical. The surgical cases might be classified into complete and incomplete obstruction, while the non-surgical cases were those in which obstruction was incomplete. As a means of deciding which cases were surgical, the x-ray was of great value, but still it was not always easy to decide. One must also be guided by the weight of the child and the character and size of the bowel movement. It was a good plan to give charcoal and see when and how much appeared in the stools and then wash out the stomach and see how much of the charcoal was recovered. Dr. Porter had mentioned that 18 of his cases in 1 series were operated on by 1 surgeon, and at the same time he made the statement that any surgeon could perform the operation. Dr. Lowenberg said he was certainly not in accord with that view. The man who operated on these cases should be one who was accustomed to handling the intestines of young children. They could not do the operation as quickly as Dr. Strauss said. It took from 20 minutes to one-half hour, and there was sometimes trouble with hemorrhage from the cut musculature. He knew of 2 instances in which the children had died from this complication.

Dr. Strauss, of Chicago, said that this accident would not happen if his method were followed and the tumor partially removed, the free edges brought together and sutured and then covered with omentum.

Dr. J. P. Sedgwick, of Minneapolis, said he wished to support the position of Dr. Porter and also that of Dr. Helmholz. He had had 68 cases and 64 were treated medically without a death. It might be maintained that he did not know this condition when he saw it, but they were cases in which other physicians had agreed on the diagnosis. Of the 4 cases treated surgically 2 died. It was a very difficult matter to know when to operate and he confessed that he did not know. He thought that the men who knew pedantically when to operate had not had the same experience that he had had. There was no doubt but that the course of the cases was much shorter when they were operated upon, and in attempting to decide whether to operate or not, he had told parents that the child would get well much sooner if operated upon. He felt that if one had 100 babies with this condition and all were treated medically or all surgically that there would be more medical cures than surgical cures, but it took longer to cure a case by medical methods and was sometimes rather tiresome. They had used Dr. Helmholz's treatment and found it valuable and he had used a somewhat similar treatment before that method was brought out.

Dr. Fritz B. Talbot, of Boston, said that if one was going to select a method and use it to the limit, it was not fair to the surgeon to use the medical treatment first and then when that had proved hopeless to turn the child over to the surgeon. The surgeon should have the baby before its condition was such that it stood slight chance of surviving an operation.

Dr. Laurence R. DeBuys, of New Orleans, stated that an examination should first be made to see if the obstruction was complete or partial. If it was complete, the baby should be operated on immediately; if it was partial, one should be guided by the weight curve. If it was found after a few days that the baby was not doing well on medical treatment it should be handed over to the surgeon.

Dr. Porter, in closing, said he had no disagreement with Dr. Talbot. His idea was that it might be possible to take fewer babies to the surgeon and to get better results. He apologized for having overlooked Dr. Strauss's work and he felt that others had made a mistake in overlooking the work of Fredet. He had had no experience with the shelling out method as performed by Dr. Strauss. He thought that nature within a few hours after operation did about what Dr. Strauss described in covering the incision with omentum. The reason he had made the statement that any man could do the operation was because babies got this disease in places where there was no surgeon with a large experience in this kind of cases, and if they understood that a good general surgeon could perform the operation they might save babies that otherwise would be lost. In doing the operation, if the tumor was properly turned out, they would find a blood free strip so that it would not be necessary to have the hemorrhage that had been mentioned.

CHEMICAL EXAMINATION OF THE BLOOD IN CHILDREN.

Dr. Henry Dwight Chapin, of New York, presented charts showing the results of blood analysis in 137 infants and children, 38 of whom were suffering from nephritis and 6 from diabetes. The sugar, urea, urea-nitrogen, creatinin, carbon dioxide combining power and phthalein output were estimated. The cases of nephritis included chronic nephritis, acute nephritis and chronic nephritis following acute infections. The normal figures for sugar, urea, urea nitrogen and creatinin in the blood of children differed little from the normal figures for adults. The blood of children showed a better phthalein output. Nephritis in children did not result in retention as quickly as in adults. Creatinin rarely occurred, though it was found in 2 out of 4 cases dying of chronic interstitial nephritis. The blood urea was an especially helpful diagnostic test in nephritis of children. The results of the phthalein test harmonized well with the clinical findings and the blood urea. The carbon dioxide combining power of the blood was a very reliable method of ascertaining the severity of the acidosis. In a series of diabetic cases the changes in the blood antedated other symptoms. One frequently found a hyperglycemia before a glycosuria could be detected, or when there was merely a trace of sugar in the urine. The findings in diabetics did not differ from those found in adults.

THE ABUSE OF CATHARTICS AND LAXATIVES IN INFANCY AND CHILDHOOD.

Dr. Louis Fischer, of New York, presented this paper in which he stated that the daily administration of laxatives and correctives to infants and children was a common practice among many mothers and nurses. This practice was so common that it was rare to hear of children whose bowels functioned normally. Drugs and correctives we'e used without rhyme or reason to suit the whims of the person in charge of the infant. While the daily use of drugs might be required for a short time to stimulate the secretions and cleanse the intestinal tract, it was unnecessary to continue this practice over a period of months. In acute febrile manifestātions or in toxic or septic conditions, where sluggish or pseudo-paralytic functions existed, laxatives were indicated and were urgently required to eliminate stagnant residue and fermenting particles of food and their toxins which might be absorbed into the circulation. This was especially true in intestinal intoxication accompanied by fever, caused by excessive fat or protein feeding. In this class of cases the subnormal condition caused by the fever demanded special attention. It was their duty as physicians to sound a note of warning to the laity that the pernicious habit of giving a daily laxative lessened the functional activity and weakened the intestinal mucosa. This would in time result in a total loss of the peristaltic waves, whereas modifying the diet and adapting it to the child would strengthen them. Peristalsis could be stimulated and modified in many ways other than by drugs. He believed the excessive purgation weakened the glandular function and robbed the glandular system of ferments and enzymes necessary for the proper assimilation of food and thus indirectly invited rickets and weakened structures in consequence of faulty metabolism. Rachitic atony of the musculature simulated constipation. The stagnant fecal contents could only be propelled by stimulation of the gut and restoring the needed tone. It was in this class of cases that cod liver oil was so efficacious.

The well known results of thyroid therapy in sporadic cretinism and the specific action on the constipation accompanying this disease needed no emphasis from him. The administration of ¼ grain of thyroid, 3 times a day, gradually increasing the dose, until 1 grain was given 3 times a day, had acted beneficially in a number of cases.

The daily administration of warm soap water enemata should also be condemned. The warm water relaxed the muscles of the intestines and, if persisted in, would produce an atony of the intestines with a tendency to prolapse. A cold enema (60° to 70° F.) had a stimulating and tonic effect. Not more than 1 pint was given at bed time, or before the second morning feeding. The importance of water in the diet was not sufficiently emphasized. Fresh, cool water would aid in eliminating food residue if given between meals several times a day. Water added to the food was not sufficient. For older children, the mechanical stimulus to the gut could be given by the addition of bran to cereals or by the use of figs, raisins, whole wheat bread, and the course cereals such as oatmeal. Vegetables such as chopped spinach or string beans, the green vegetables, rather than the starchy cereals such as potato, should be given.

Discussion.—Dr. John Lovett Morse, of Boston, said that there was no question but that cathartics were used too much. Dr. Fischer had spoken of the use of cod liver oil in cases of rachitic atony. Cod liver oil had no antiscorbutic properties. He had also spoken of giving ¾ of a grain of thyroid in one case. If he had had a case that bore such a dose of thyroid he would have been inclined to think he was dealing with a case of cretinism, because normal children reacted to that dose.

Dr. Julius H. Hess, of Chicago, said that at the Michael Reese Hospital they had carried out experiments with healthy babies to see what quantities of different laxatives could be given without causing intestinal irritation. They had found that 1 dram of magnesium sulphate or 1 gram of castor oil would cause microscopic blood in the stools. It was evident that these irritating cathartics could not help doing harm.

Dr. W. R. Ramsey, of St. Paul, stated that aside from abnormalities, there was no such thing as constipation in new born babies; he did not believe constipation existed except in connection with anatomical abnormalities. Certainly the classical dose of castor oil on the third day was responsible for some of the trouble.

THE ANALYSIS OF HUMAN MILK: THE TECHNIC OF OBTAINING SAMPLES AND THE INTERPRETATION OF RESULTS.

Dr. Fritz B. Talbot, of Boston, stated that their series of analyses of human milk was inspired partly by the lack of knowledge of the chemistry of human milk, partly by the consideration given this subject by Dr. Sedgwick and others, and partly by the fact that new methods of analysis had been evolved by Folin and Dennis by which greater accuracy could be obtained than was possible heretofore. These analyses had shown that there was a certain normal variation in the composition of human milk from the beginning to the end of lactation, and from the beginning to the end of nursing. This fact was of great importance in obtaining samples for analysis. The first milk drawn tended to contain a lower amount of fat, and the last to be drawn contained a higher percentage of fat. The difference between the 2 periods might be as much as 10 per cent. In the second place, there was a difference in the amount of lactose from the beginning to the end of nursing, the amount of lactose being higher at the beginning than at the end. The difference, however, was not so great as the difference in fat, being rarely more than 1 per cent. The difference in the percentage of protein was so little that it could be neglected.

As an example of the mistakes that might be made by obtaining milk for analysis at the wrong time, one sample contained 1.5 per cent. fat, 7.7 per cent. lactose, and 1.8 per cent. protein. The correct composition of this milk was 4.5 per cent. fat, 7.5 per cent. lactose, and 1.6 per cent. protein. This correct composition was found by taking the milk both before and after the mother had nursed the baby and mixing the samples, or by analyzing the specimens taken before and after nursing and averaging the results.

While the method of collecting the samples was of great importance, of equal importance was the method of analysis. The ordinary method by which the percentage of fat was ascertained by the Babcock apparatus was inadequate.

Dr. Talbot said that a third factor to be brought out was one he had spoken of several days ago. This was that before any one was capable of judging whether a milk was abnormal or not, he must know whether it was normal or not. That statement seemed self-evident, but men became interested in pathology and neglected to study the normal, so that the point he most wished to emphasize was that it was most important to know the normal and variations. The normal variations in the amount of fat were from 2 to 8 per cent; for sugar, from 6 to 8 per cent. Human milk might contain in the early days of lactation 2.5 per cent. of protein and after 10 weeks it might contain normally below 1.5 per cent. but not below 1 per cent. protein.

How might the analysis of human milk be of value? As an example, in one instance the composition of the mother's milk was: fat 1 per cent.; lactose, 8 per cent.; protein 1 per cent. That baby was put on the bottle and did well. That was an isolated case, however. In another instance a baby had been operated on for pyloric stenosis and was not doing well on the wet nurse's milk. The baby did well to a certain point and then did not do so well. The foster baby had been nursed first and the nurse's own baby second. The foster baby was nursed second and her own first and under this regime the foster baby progressed satisfactorily. Dr. Talbot said he brought this subject up because many babies were weaned, because the chemical analysis seemed to show that the milk was not of the proper composition and in order to be sure of the composition of milk the samples must be taken during different periods of nursing, and because it was important that the physician who made the decision, as to whether a milk was of satisfactory composition, must know the normal limits and variations that occurred in human milk.

Discussion.—Dr. John A. Foote, of Washington, D. C., recalled that a few years ago he read an interesting summary on the analysis of human milk by Dr. Abt, who called attention to the fact that breast milk varied according to the period when it was taken, whether at the beginning, middle, or end of nursing. Dr. Abt also called attention to the fact that the milk varied in richness according to the time of day when it was taken, and there was sometimes a variation in the quality of the milk according to whether it was taken from one breast or the other. Hence it was evident that one could not depend upon the analysis of one sample in deciding whether a certain milk was suitable or not and it was important that observations should be made as accurately as possible under the circumstances.

THE NERVOUS CHILD AND HIS MANAGEMENT.

Dr. Bosworth McCready, of Pittsburgh, said the nervous child presented certain stigmata of degeneration, which he reviewed. Nervous inadequacy was, he said, the rule rather than the exception in modern life. Nervous stability in the adult was dependent on hereditary endowment and on the stimulative developmental forces of nature and nurture. Nervous instability occurred as a result of (1) hereditary deficiency in developmental forces; (2) hereditary deficiency aggravated by inadequate stimulation through nurture; (3) malign factors in the environment affecting an hereditarily sound constitution, in which (a) the stimulative developmental forces were adequate, or (b) in which there existed an insufficiency or perversion of stimulative forces. Early childhood was the time for the institution of corrective measures. Corrective measures should aim to stimulate and stabilize developmental forces and to remove or counteract malign factors in the environment. The modification of the environment was the first factor which should receive attention. The home environment was often at fault. If the child remained in his home, he should be under the care of a physician and the physician's orders should be strictly observed. The child must have rest and fatigue must be avoided. Frequently it was impossible to secure the right environment in the home, and it was then best to remove the child to a different environment. A fact not generally realized was that many children in well to do homes were not well nourished. The same care given to live stock had not been given to children. Three prime requisites for the raising of stock were proper kind of food, in proper amounts, with the different food elements properly balanced. In addition, exercise and fresh air were necessary, these same requisites applied to children. The modern apartment was a pest for anyone and an abomination for the child. The child must return to a more primitive form of life. He should study nature and not books. The conventions of the modern school did not meet the requirements of the nervous child. Seguin, who was an educator in advance of his time, had advocated a scheme of education which should provide garden schools and open air schools. Some general rules were formulated by him. He said "Never teach anything in-doors that can be learned from nature; teach nothing from books that can be taught from nature; teach nothing from dead nature that can be taught from living nature." The time would certainly come when such a system with modifications to meet the necessities of the times would be carried out.

Discussion.—DR. PERCIVAL J. EATON, of Pittsburg, said that this paper was so complete and unique in its way that there was little to be said in the way of discussion, but there were a few points brought out that might be emphasized with advantage. Some children were born nervous, perhaps a greater number acquired nervousness, but the majority had nervousness thrust upon them. Those who had studied the effect of environment knew that this was true. It was the paramount duty of the pediatrician to teach mothers and nurses and the rising generation of girls these points upon which the shipwreck of the child could occur. He quite agreed with Dr. McCready as to effect on the growing child of the complexities of modern life. The tendency of "back to the soil" should be encouraged. He believed in making machines of children so far as the regularity of their lives was concerned. One should begin immediately after birth to train the child to be a machine, that is regular habits should be cultivated from the moment of birth. The opportunity of the pediatrist was very great in the direction of educating people in the proper care of the young, and he should start in to do this at once if he was not already doing so. If Dr. McCready's ideas were carried out, and they taught the importance of heredity and environment, there would be an improvement in the quality and character of our young.

DR. JOHN LOVETT MORSE, of Boston, said he agreed with what had been said about the nervous child, but he thought it also applied to the delicate child. After having tried to educate the parents of children of this type he was inclined to feel a little pessimistic as to the results in many cases. Once he knew of parents who built another house for the child and hired a nurse and that child grew up very well. When one met people of the type who from the moment a girl was born planned only to marry her off well, you could not expect to do much with them; in other words you could not teach nervous fools to bring up children. Perhaps he had been unfortunate in running against that class of patients; in some of those cases you could not get results unless you removed the children from the home, try as hard as you might.

A STUDY ON A FOUNDLING INSTITUTION TO DETERMINE THE EXISTENCE OF CONGENITAL SYPHILIS.

Dr. Laurence R. DeBuys, of New Orleans, presented this communication. He stated that the children were classified according to whether they were legitimate or illegitimate, and a comparison of Wasserman and luctin reactions and clinical symptoms was made. In summarizing, he stated that the Wassermann and luetin reactions were performed accurately as was shown by the controls made. The negative reactions in several cases investigated might have been explained by the value of the treatment to which each individual had been subjected as a routine procedure, or it might have been that the bloods had not become positive. The luetin tests in this series had proved of greater value as a diagnostic measure than the Wassermann reaction, in detecting cases of congenital lues, and the clinical findings were of greatest value at that time when the value of the luetin was at its minimum, namely the first few months. The effect of the iodides was again shown in this study. This lesion was characteristic and could not be confounded with the normal positive luetin reaction. Because of the ages of those examined and the character of the institutions, this investigation afforded an excellent opportunity to study the various available means of detecting the existence of congenital lues. Of the infants examined 74.6 per cent. were up to the age of 2 years and 41.6 per cent. were below 1 year of age. Congenital lues was found to be relatively more frequent in the illegitimate than in the legitimate. This series did not present a fair criterion for a comparison of the Wassermann and luetin reactions but it gave a fair idea of their relative values in connection with congenital lues at that time of life. The existence of syphilitic skin eruptions in cases in which both Wassermann and luetin reactions were negative was of decided interest and further emphasized the necessity of employing all available means, including a complete physical examination and laboratory tests in the presence of skin eruptions, before determining whether they were syphilitic or not. Enlarged livers, spleens and glands appeared to be the most constant evidences of congenital lues and in these institutions were present in 83.96 per cent. of the cases; 9.53 per cent. showed clinical findings with skin eruptions, while many other cases, classified as doubtful or negative, had certain of the clinical symptoms of congenital lues but not sufficient to warrant a positive diagnosis. The routine medical care in these institutions was of interest in view of the laboratory findings. All children suspected of having congenital lues were given 12 gray powders, 3 daily for 4 days. If they showed any skin eruption, they were treated by application of mercury to the belly band and syrup of ferrous iodide was administered.

Discussion.—DR. W. R. RAMSEY, of St. Paul, said that as to the relative merits of the Wassermann and luetin reactions he merely wished to recall that he had read a paper before the American Pediatric Society which was published in the American Journal of Diseases of Children in which he gave the result of observations made as to the amounts of mercury eliminated when this drug was administered in different ways. While he could not quote the exact figures found in the course of those investigations, it was shown that mercury was absorbed very rapidly and that they had been giving mercury in much larger quantities than was necessary. Mercury continued to be eliminated for a period of 8 or 10 days, and even if given by the mouth it continued to be eliminated for 5 or 6 days. He simply desired to emphasize the fact that they had been giving mercury in too large quantities to children and that it continued to be eliminated for a long time.

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ORIGINAL COMMUNICATIONS

THICK CEREAL FEEDINGS IN TWELVE CASES OF MALNUTRITION IN INFANCY, WITH REPORT OF TWO TYPICAL CASES

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The author's attention was first called to thick cereal feeding in infancy through an article by Dr. L. W. Sauer,[1] of Chicago, on thick cereal feedings in pyloric stenosis and pylorospasm. Later he had the opportunity of seeing, and taking care of one of Dr. Sauer's cases, and had noted the remarkable results obtained in this condition. It occurred to him that it would be an excellent idea to try out the thick farina feedings in cases of marasmus, and in cases which simply would not gain in spite of what was done for them. Accordingly 4 cases in the Nursery and Child's

Hospital, and 8 cases in private were selected, the ages running all the way from 4 weeks to 6 months. The hospital cases were babies who had approached hospitalization, were physically not abnormal, and had all been tried on various formulae in the endeavor to make them gain.

The cases in private were the same type, many of them having gone the rounds from doctor to doctor. Practically all of them had been fed on high sugar of every kind, some on high fat, some on high sugar proprietary foods, others on various formulae, and all had failed to gain, or had gained but very little since their birth. In practically every one of this series was assimilation presumably good. They took their food, digested it perfectly, and simply would not gain.

The stock formula on which these thick cereal babies were started was approximately 1 tablespoon of farina to 7 ounces of a 1 per cent milk. To the entire formula about 3 per cent of cane sugar was added. This form of sugar was used to make the feedings more palatable. Later dextri-maltose was added. All of this was cooked together for at least 30 minutes, or *until the cereal was so tenacious and thick that it would barely fall off an inverted spoon.* We have found that if it is not cooked thoroughly the baby may get up a diarrhea from the high starch with the encouragement of a saccharolytic flora, and accordingly will not gain. Owing to a mistake in the diet kitchen this happened in 2 of the hospital cases. Just as soon as it was more thoroughly cooked the increased peristalsis stopped, and the babies gained. We have never found any increase in the starch in the stools after a thorough cooking, and indeed the stools on the whole have been very normal. In 4 of our cases rice flour was used. This has the advantage of being more soluble, and has better protected colloids than farina. The pyloric reflexes, therefore, are better inhibited and are not as active.

The two following typical cases have been picked out:

CASE NO. 1. J. W., age 4½ months, male, born February 24, 1918, birth weight 7 pounds, 12 ounces, second child, 1 miscarriage at 2½ months, full term, normal baby, labor normal, 6 hours, no family history of any disease. Was nursed 10 days. This was stopped because the nurse told mother that she had no milk. At this time the weight was 7 pounds, 10 ounces. First formula: milk, 6½ ounces; barley water, 13 ounces; lime water, 1½ ounces; milk sugar, 3 teaspoons. The baby was kept on this for 2 days, the breast being supplemented with 2 ounces of this formula 7 times a day.

On March 12 (16 days old), he vomited after every feeding and had frequent green stools. He was taken entirely off the breast and a weaker formula was given of milk, 7 ounces; barley water, 17 ounces; lime water 1½ ounces; milk sugar, 1½ ounces. Of this 3½ ounces were given at 6-9-12-3-6-10-2. The vomiting, which was non-projectile in character, still continued however, and on March 24 a change of doctors was made. At this time the weight was 7 pounds, 8 ounces, or a loss of 4 ounces since birth.

A new formula of 1½ ounces off the top of 3 bottles of Walker-Gordon milk; water, 11 ounces; and lime water, 4½ ounces was ordered. 2½ ounces were given every 3 hours, 8 feedings. This was increased on March 29 to the upper 2 ounces of 3 bottles; water, 13 ounces; lime water 5 ounces; and 3 ounces were given at 8 feedings. This formula was kept up until May 16, and during this period the baby was not weighed, bathed or touched, by the doctors' advice. As the vomiting still persisted, and the parents were getting rather worried, another specialist was called in on May 17. The weight was found to be 9 pounds, 4 ounces. Barley water for one day was ordered, and then milk, 16 ounces; boiled water, 15 ounces; and lime water, 1 ounce. 4 ounces, 8 feedings were given. One week later 8 tablespoons of Mellin's food were added.

From May 24 to July 6 the formula was gradually increased until, when seen by the writer, the baby was on milk, 18 ounces; water, 17 ounces; Imperial Granum, 3 teaspoons; lime water, 1 ounce; dextri-maltose, No. 3, 3 teaspoons. 6 ounces, 6 times a day, every 3 hours. During this period the spitting-up had persisted. Dextri-maltose, No. 1, malt sugar, cane sugar, and milk sugar had all been tried with no good results. Weight July 6, 10 pounds, 8 ounces.

When seen on July 8 the physical examination was negative, with the exception of craniotabes and a rather marked degree of emaciation. There were no masses in the abdomen, no peristaltic wave, and absolutely no evidences of either pyloric stenosis or pylorospasm. A diagnosis was made of chronic gastric indigestion from one of two things: 1. Cow's milk idiosyncracy. 2. High fat feedings.

Accordingly, a formula was ordered of 25 ounces of 1 per cent milk; 8 ounces of water; 3 level tablespoons of dextri-maltose, No. 3. This was boiled 3 minutes and 5½ ounces were given 6 times a day every 3 hours. This formula did not relieve the vomiting, but the baby gained to 11 pounds and 3 ounces on July 20. Thinking that the child *might* be a case of pylorospasm, 2 drops of a 1-1000 solution of atropin were added to each bottle. This tended to improve the vomiting temporarily, but there was no gain. Finally, on July 31, the baby was put on the following formulae:

1 per cent milk, 17 ounces;
Water, 3 ounces;
Dextri-maltose, No. 3, 1½ tablespoons;
Atropin, 12 minims (1-1000 solution);
6½ ounces at 6 A. M., 10 A. M., and 10 P. M.

1 per cent milk, 15 ounces;
Farina, 2½ level tablespoons;
Granulated sugar, 2 tablespoons;
Boil 30 minutes, divide into 2 feedings, and feed with a spoon at 2 P. M. and 6 P. M.
The weight on July 31 was 11 pounds and 2 ounces.

As there was still a small amount of vomiting after the atropin skimmed milk feedings, on August 2, three cereal feedings and 2 fluid feedings, were given. The vomiting absolutely stopped and the baby started to gain with a rush. The weights for the weeks following were:

July 31, 11 pounds, 2 ounces;
August 1, 11 pounds, 8 ounces;
August 2, 11 pounds, 12 ounces;
August 4, 11 pounds, 14 ounces;
August 7, 12 pounds, 1 ounce;
August 12, 12 pounds, 6 ounces;
August 17, 12 pounds, 14 ounces;
August 24, 13 pounds, 3 ounces;
August 31, 13 pounds, 14 ounces;
Sept. 7, 14 pounds, 4 ounces (atropin cut out. 2 teaspoons of spinach added to cereal);

Sept. 21, 15 pounds, 6 ounces (a gain of 68 ounces in 8 weeks, or over 8 ounces a week).

During this period the baby ate extremely well. There was no distention or edema, and he became bright and normal in every way. He was gradually changed over to a semi-solid diet, and at the age of 1 year weighed 24 pounds.

COMMENT.—This child had at no time any symptoms of either pyloric stenosis or pylorospasm. In the author's opinion he was a case of gastric indigestion with failure to gain, which was absolutely cured by a thick cereal diet.

CASE NO. 2. C. L. B., age 10 weeks, male, born March 6, 1919, second child, full term, normal baby, birth weight, 7 pounds, 8 ounces, normal labor. No family history of disease. Was nursed 4 weeks and was then weaned. A formula of Dryco dry milk, dextri-maltose and water was ordered. This was gradually increased until at 10 weeks, when first seen, the formula was Dryco milk, 4 tablespoons; boiled water, 4 ounces; dextri-maltose, 2 teaspoons; and he was given 7 feedings.

Examination revealed a physically normal child, emaciated, and marantic in appearance, weighing 8 pounds, 12 ounces. There had never been any evidences of indigestion, with the exception of an occasional spitting-up, and the failure to gain was the chief source of worry to the parents.

The child was put on a thick cereal feeding of skimmed milk, 26 ounces; farina, 4 level tablespoons, and granulated sugar, 2 level tablespoons. This was boiled 30 minutes, and 3 tablespoons were given at 6-10-2-6-10-2. This was gradually increased to 2 per cent milk, 27 ounces; 5 tablespoons of farina, 2 tablespoons of granulated sugar, and 1 tablespoon of spinach, chard or string beans. This was divided into 5 feedings and fed with a spoon. An immedate change for the better followed. The weights for the 10 weeks following were:

May 22, 8 pounds, 12 ounces;
May 29, 9 pounds, 9 ounces;
June 5, 10 pounds, 1 ounce;
June 12, 10 pounds, 7 ounces;
June 19, 10 pounds, 12 ounces;
June 26, 11 pounds, 3½ ounces;
July 3, 11 pounds, 12 ounces;

July 10, 12 pounds, 4 ounces;
July 17, 12 pounds, 12 ounces;
July 24, 13 pounds, 5 ounces;
July 31, 13 pounds 14 ounces (a gain of 82 ounces in 70 days, or over 8 ounces a week).

During this period the child's digestion was perfect, the stools being well digested (2 a day) and there was no vomiting. In appearance he changed from a sallow, undernourished, marantic child, to a fat, rosy, happy one.

These 2 cases are typical of the other 10, the second case being rather the more typical. In every case was there a decided change for the better physically and a decided gain in weight. None of these babies was luetic and there seemed to be nothing in the physical examination or history to account for their failure to gain, prior to the cereal feedings. A striking point about the feedings was the high caloric intake which these babies would handle, in many of the cases it being 200 calories, or more, over their requirements. Incidentally we figured the required calories at 110 to 130 per kilo, an over-estimation in view of the condition of the babies. One of the series, a baby of 6 weeks, handled the cereal well and averaged over 9 ounces a week for 3 months.

Porter[2], in an article in Archives of Pediatrics, July, 1919, on pyloric stenosis, has had a similar experience to ours. He states: "One point is the striking increase in tissue turgor and the marked improvement in the child's well being. So much so that we have adapted the feedings to many cases of malnutrition with most satisfactory results." However, he mentions no specific cases.

In regard to the length of time that one can keep a child on thick cereals, there is no fixed rule. In one of the author's cases it was persisted in for 8 months with good success. Naturally, other articles of diet were added from time to time, the green vegetables and fruit juices in particular being used. Spinach, string beans, and Swiss chard were found to be tolerated the best. It seemed best, however, to make a change back to a milk formula at the end of about 2 months, dry milk being used in the majority of cases. Most of these babies seemed to have *gotten into the habit of gaining,* and the change back hardly ever affected them badly. To supply the water deficiency, there was ordered water in amounts up to 6 ounces, 3 times a day. However, in 2 of our cases, no water whatsoever was given, even during the hot part of the Summer. The urine of these cases in every case was found normal, and there was no loss of weight, or edema, or evidence of water retention. This seems quite remarkable on account of the high starch and sugar given, and the normal stools. The amount of fluid lost in the stools, however, could not be estimated. In fully three-quarters of the cases various forms of sugar had previously been given in large quantities in the hopes of making the child gain, but none of these had proved successful. By the thick cereal method there was increased tolerance with no disturbance of sugar or starch metabolism, and the rapidity of gain was marked. It should be noted that orange juice was always given as an antiscorbutic. In view of this series of cases we feel that although we have not a cure-all for *all* difficult feeding cases, we think that our results justify its thorough trial.

CONCLUSIONS.

1. Thick cereal feedings are a valuable adjuvant in cases which will not gain.
2. Babies tolerate a high starch and sugar in this method of feeding.
3. For this reason high calories may be given.

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134 *East 76th St.*

TRANSMISSION OF SMALLPOX TO FETUS (Pediatria, Naples, April, 1919). Cappellani reports 4 cases in which the new-born infant developed smallpox showing that it had evidently been infected before birth, while the mother was merely in the phase of incubation. The infants seemed normal at birth, but developed the symptoms of smallpox in 5 or 6 days. In another case the mother was healthy but the infant showed fever 24 hours after birth, and the next day unmistakable signs of smallpox followed. The mother was revaccinated at once and gave a typical response but showed no signs of smallpox at any time, although smallpox was known in the quarter at the time.—*Journal A. M. A.*

THE CHILD AND THE STATE.*

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War has enhanced the value of child life and the great potential loss of a high infant mortality is now more clearly recognized. A slumbering people has been aroused to a realization of the national responsibility and necessity for child welfare work. Our hearts and our pocketbooks were opened by the pathetic appeals of helpless suffering children in Europe. We sent skilled specialists and experienced child welfare nurses to relieve the suffering among children in the war-stricken and devastated regions of France and Belgium. They were the means of saving and reclaiming thousands of babies and young children and they touched the hearts of the French people and won merited praise from the French Government. This we should have done, but we should not leave the work in this country undone.

As we enter upon an era of reconstruction after these awful years of destruction this nation can not afford to neglect the welfare of its children. Holt called attention to the fact that no resources of the state need so much to be conserved as do its children. A nation may waste its forests, its water power, its mines and even its land, but if it is to hold its own in its struggle for supremacy its children must be conserved at any cost.

A child should have the right to intelligent consideration before he is born, to be born well and to be kept well. To insure this is the purpose of all child welfare work. The future of this or any nation depends on the physical and intellectual strength of the children of today. Cicero recognized this principle when he said that the very foundation of the whole commonwealth lies in the proper bringing up of the young. Sir George Newman, a few years ago, claimed that the state should give to all children, whether normal or defective, whether rich or poor, a sound and liberal education both of body and mind. He proposed, as minimum standards to produce in the individual child the results the state requires, the following:

1. That every child shall come periodically under direct

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*Address delivered at the 121st Annual Meeting of the Medical and Chirurgical Faculty of the State of Maryland, April 22, 1919.

medical and dental supervision, and if found defective shall be "followed up."

2. That every child found mal-nourished shall, somehow or other, be nourished, and every child found verminous, shall, somehow or other, be cleansed.

3. That for every sick, diseased or defective child skilled medical treatment shall be made available.

4. That every child shall be educated in a well-ventilated schoolroom or classroom, or in some form of open air schoolroom or classroom.

5. That every child shall have daily, organized, physical exercise of appropriate character.

6. That no child of school age shall be employed for profit except under approved conditions.

7. That the school environment and the means of education shall be such as can in no case exert unfavorable or injurious influences upon the health, growth and development of the child.

This same general thought was expressed in a recent address by Dr. Finegan, Acting Commissioner of Education for New York State. "The democracy that is to endure will not only train the minds and the hands of its future citizens; it will look to the conditions of their bodies. Again I voice a platitude which must become a practice if we are to prove ourselves worthy of leadership among the nations of the earth. We have shamefully disregarded the physical well-being of our children. It is as vitally important to teach boys and girls how to take care of their bodies, the essentials of a well-regulated diet, the value of recreation and play, of sunshine and pure air, of rest and sleep, and the relation of these things to the training of the mind and the hand, to the development of character and to the preservation of life itself, as it is to teach them to read and write. The health of a nation, we have lately discovered, is of vital concern in its striking power. Health instruction should be given in every schoolroom with the same regularity and definiteness that instruction is given in English or any other subject."

This, bear in mind, is the opinion of a layman, not of a physician.

In Europe the declining birth rate is a matter of national concern and it had fallen so rapidly in some countries even before the war as to threaten the political position of the nation.

In our own country there is a gradual decline in the birth rate which is not accidental or temporary. Babies are becoming scarcer, and the small family system seems to be in vogue.

Mr. Wells in his recent novel "Joan and Peter" makes an interesting comment on this subject.

"The end of the nineteenth century was a happy and beautiful time for the bodies of the children of the more prosperous classes. Children had become precious. Among such people as the Stublands one never heard of such a thing as the death of a child; all their children lived and grew up. It was a point upon which Arthur had never tired of insisting. Whenever he had felt bored and wanting a brief holiday he had been accustomed to go off with a knapsack to study church architecture, and he had never failed to note the lists of children on the monuments. There you are again, he would say. Look at that one: 'and of Susan his wife by whom he had issue 11 children of whom 3 survived him.' That's the universal story of a woman's life in the 16th and 17th century. Nowadays it would read, 'by whom he had issue 3 children, who all survived him.' And you see here, she died first, worn out, and he married again. And here are 5 more children, and 3 die in infancy and childhood. There was a frightful boom in dying in those days; dying was a career in itself for two-thirds of the children born. They made an art of early death. They were trained to die in an edifying manner. Parents wrote books about .their little lost saints. Instead of rearing them."

A glance at the infant mortality statistics of any city, state or civilized country for the past 15 years will show a marked decrease, which means that countless lives have been saved and sickness prevented. Take for example New York City. In 1902, the infant death rate was 168 per 1000 living births; in 1911, it was 120 per 1000 living births; in 1913, 102, and in 1918, it fell to 92 per 1000 births in spite of the fact that there was an increase in the death rate for all ages due to the influenza epidemic.

These results can not be attributed to any one cause, but must be due to some influence or influences not in operation before 1900. Dr. Holt makes the pertinent inquiry "Does God fix the death rate Once men were taught so, and death was regarded as an act of Divine Providence, often inscrutable. We are now coming to look upon a high infant death rate as evidence of human weakness, ignorance and cupidity. We believe that Providence works through human agencies and that in this field, as in others, we reap what we sow—no more and no less."

The 3 most frequent causes of death in the first year of life are those due to congenital conditions, diarrheal diseases and respiratory disorders. Over 40 per cent of these deaths occur in the first month of life and are directly or indirectly the result of causes affecting the child before and during its birth. The success of pre-natal clinics and care has demonstrated that at least one-third of these deaths are preventable. This work is largely educational and the mother is instructed how to prepare for the coming event, proper obstetrical facilities are provided and her health is closely supervised.

Diarrheal diseases used to reap a grim harvest every summer, but like diphtheria are now no longer dreaded, for we know their cause and prevention. An outbreak of diarrheal disease in any community should brand it with the same stigma as is now attached to an outbreak of typhoid fever. The number of deaths from diarrheal diseases in New York City have been reduced from 6360 to 3735 in the past 10 years, a proof that this class of diseases is preventable. This great decrease, which is not confined to any one locality, is largely the result of educational propaganda. Today there are few mothers who do not know that diarrhea is the result of improper food and feeding and of unclean and unpasteurized milk, and that it is cured by prompt elimination of the toxic products with a short abstinence from food.

The third group consists of deaths due to diseases of the respiratory system. The common house cold with its long train of fatal complications makes us look with greater dread on the "winter complaint" than on the "summer complaint." Here again education is our greatest weapon of defense. Teach the mother the danger of the common cold, of exposing her child to infection, the importance of caring for and treating slight head colds and coughs, and the mortality from these causes will surely fall.

Ignorance is undoubtedly the chief factor in the problem of infant mortality, and the only solution is by education. Experience has taught us that babies die, not because they do not get enough food but because they are fed too often or too much; that they die, not because they are exposed to cold air but because they do not have enough fresh air and are kept indoors in overheated rooms; that they die, not because they do not have enough clothes but because they have too many. They do not die because they are unloved and uncared for, but because they receive too much misplaced attention. In other words, babies will survive poverty and bad sanitation, but they can not survive ignorant motherhood.

The most effective means of combating this ignorance is by means of what are now known as Child Welfare Stations. These developed from the Infants' Milk Depots. The suggestive term *"School for Mothers"* is applied to similar efforts in England. In France they are known as *"Infant Consultations."* The work of these centers is preventive and the aim is to educate, and not to treat disease. They are *well-fare* centers for well babies, and the object is to keep them well. They supply very little milk but a great deal of advice. The main functions of a child welfare station may be outlined briefly as follows:

To advise and instruct mothers in the care and feeding of babies;
To encourage and prolong breast feeding;
When artificial feeding is necessary, to see that clean, pasteurized milk is provided, to prescribe suitable mixtures and to insure the proper preparation of the food by the mothers in their own homes;
To teach mothers the way to prevent many of the diseases of childhood, due to exposure and errors in diet;
To assist in the care, instruction and preparation of the expectant mother;
To care for children in the pre-school age and to supervise their homes and surroundings;
To maintain a place where mothers will come with their troubles and receive sympathetic and intelligent advice.

In looking over mortality statistics of the pre-school and school age, I was astonished with the number of deaths from "accidents." Mr. Eastman of the Division of Vital Statistics, prepared a chart showing the chief causes of death by ages. At 2 years, accidents rank third in the list of causes; at 3 years, second, and from the fourth to fourteenth years, they occupy the first place. Taking an average of 3 years, the causes of the accidents can be grouped as follows:

Out of an annual average of 2224 accidents twice as many occur among boys or 1435 in boys and 789 in girls. The most frequent single cause is burns and these are divided about equally between the sexes. There were 500 deaths from railroad, street car and automobile accidents, of which 355 were in boys and 145 in girls. Six times as many boys were drowned as girls, while the deaths from poisons were equally divided between the boys and girls. One hundred and forty-five boys were killed by trauma from firearms, cutting instruments, etc., while only 76 girls suffered death from these causes.

A large proportion of accidents are due to carelessness, not alone on the part of the immature and often irresponsible child, but of the parents and the community. Here again we find an important group of fatalities which are largely preventable and the responsibility to a large degree rests on the community or state.

A new branch of pediatrics has been evolved in the past 20 years—one concerned with the study of the child in health and with the prevention of sickness. The older branch devoted to the detection, study and treatment of disease in children, occupies the entire attention and minds of most of our specialists. The 2 branches are of course complementary, but we should not attach an exaggerated importance to the symptoms of disease. To cure is splendid, but to prevent is Godlike. Let us direct our chief energies to the prevention and early recognition of minor ailments and defects before they have assumed serious proportion and while they are still amenable to treatment.

The medical profession has not realized the opportunities for service and the fulfillment of its highest ideas in directing and assisting social welfare and educational work. By our indifference we have allowed the non-medical social worker to grasp a great opportunity and gather all the credit.

Let me briefly enumerate by way of illustration some of the functions of social preventive pediatrics:

Prenatal work in its various phases, prenatal clinics, etc.

Prevention of infant mortality, including child welfare stations, day nurseries, Little Mothers' Leagues.

Medical school inspection and health supervision of the child *of pre-school age.* Every child should receive a careful physical examination with individual attention to each defective or ailing child. Provision for fresh air, physical exercises and healthy school environment.

The problem of the poorly nourished child, establishment of nutrition classes, school lunches, etc.

The prevention of tuberculosis in children. Open air schools, preventoriums, and resident sanitaria.

The prevention of dental caries. Hygiene of the mouth, suitable dietaries, dental clinics, etc.

The care and education of the crippled child. The backward and mentally defective child. The child in industry.

New York State was the first in the United States to have a special division in the department of health devoted solely to child welfare work. It is significant of the spirit of the times that 9 other states have followed the example set by New York State. The rôle maintained by this division is of necessity mainly advisory. The plan followed has been to study local conditions in various parts of the State, to arouse enthusiasm in child welfare work, to emphasize the great need of reducing infant mortality and to suggest adequate means for its prevention. The establishment of child welfare stations, with trained child welfare nurses, where the infant mortality was high, was the first step. To arouse the necessary interest, 3 child welfare exhibits were prepared, each exhibit with a manager, trained nurse and mechanic. Motion pictures and stereopticon slides were a part of the equipment. The general plan was to have an advance publicity agent visit each locality scheduled for an exhibit and call a meeting of all interested in child welfare work, organize local committees and arrange for newspaper publicity and advertising. During the exhibit week a series of meetings were held, the mayor presiding at the first meeting and the subsequent ones put in charge of the Women's Club, Federation of Labor or some other local organization.

These exhibits have visited over 200 localities in the State since the establishment of the Division of Child Hygiene. In the summer months the exhibits are sent to the county fairs and attract a large number of farmers and their families. In the past 5 years about 150 fairs have been visited where it is estimated that over 3,000,000 people viewed the exhibits.

The preparation and distribution of child welfare literature has proved one of the most important and valuable phases of the work. A small booklet entitled "Your Baby—How to Keep It Well," was prepared and is sent to each mother in the State with a letter of congratulation and information as soon as her baby's birth is reported. About 100,000 books are distributed in this way annually and nearly the same number are given out by the nurses at the exhibits. This is published in both English and Italian. Last year a pamphlet on prenatal care was prepared and is sent with a letter from the Commissioner of Health to each bride on receipt of the certificate of marriage.

Closely related with the work of the division has been the rudimentary training of young girls in the first principles of baby care and feeding. The plan of organization and instruction, outlined by Dr. S. Josephine Baker a few years ago under the name "Little Mothers' Leagues," has been followed and introduced in the public and parochial schools throughout the State. There are over 200 leagues in operation, with a membership of over 25,000 girls.

The main activities of the Division of Child Hygiene can be summed up as follows: The establishment of child welfare stations; appointment of public health nurses; organization of local agencies to further the work of child hygiene; educational work in the interests of the child, including instruction in prenatal and post-natal care; obtaining provision for sick babies at hospitals; supervision of day nurseries; improvement of birth registration; newspaper publicity on child welfare and creating a demand for better milk, and pasteurized milk.

The results of this state-wide child welfare work can hardly be measured in words or by statistics. In 1913, the year before the establishment of the Division of Child Hygiene, the infant mortality rate for the State was 120 per 1000 living births, while in 1918 this figure was reduced to 97 per 1000 living births, which we might state as a matter of interest, is the same as that of England and Wales for the same period. While there were only 12 localities where infant welfare stations were in operation there are now 67 and the number of stations themselves have increased from 32 to 116.

New York State may well be proud of the record already established, but there remains much to be accomplished, for the surface has scarcely been scratched. It has been clearly demonstrated, however. that child welfare work pays big dividends both in health and happiness and that the state can not afford to neglect and ignore its potential citizen.

Dr. S. Josephine Baker, whose large experience and intimate knowledge of child welfare work entitles her to a hearing, has outlined a broad vision on reconstruction and the child. She would have in each state a department of child welfare of equal importance with other state departments. The organization would consist of a commissioner, with the work subdivided into several bureaus. For instance,

1. *A bureau of child caring institutions,* which would supervise orphan asylums, day nurseries, boarded-out babies, widows' pensions, etc.

2. *A bureau of mental hygiene,* which would have charge of all matters pertaining to mentally defective children.

3. *A bureau of delinquency.* Here the relation of crime to health would be studied and the prevention of crime in children, as well as supervision of the children's courts.

4. *A bureau of recreation,* which would supervise playgrounds, physical training and play.

5. *A bureau of child labor*—the supervision of the child in industries belongs to the Department of Child Welfare. Child labor laws should be carried out from the point of view of the child not from the point of view of labor.

6. *A bureau of child hygiene.* This would be responsible for the health and care of children from the prenatal period to adolescence. Its activities would include control of midwives, prenatal care, prevention of infant mortality, child welfare stations, health supervision of the child of pre-school age, medical inspection and examination of school children, etc.

7. *A bureau of child legislation.* This would prepare a children's code which would consist of all essential legislation to protect the child from the prenatal period to adolescence.

This is not a mere visionary ideal, but is a practical possibility. Such a department would insure a square deal to every child and the state would profit for the next generation, would be healthier and stronger and better fitted to carry on the work we must leave behind.

AN UNUSUAL CASE OF CRETINISM

By Charles Gilmore Kerley, M. D.

New York

The patient was referred to me from Ottawa, Canada, on April 17, 1918. She was 8½ years old, and weighed 40½ pounds. Her weight was 37½ inches. The history is as follows: full term child, weight 4½ pounds at birth, nursed by mother for 7 months, and then bottle-fed. Weight records of the various periods of infancy were not obtainable. Her growth, however, was slow, and she appeared backward in development. The first tooth was cut at 15 months, and she did not walk until the 3rd year. The appetite was habitually poor, and there was habitual constipation. She was always dull and inactive and took but little interest in her surroundings.

Physical Examination. The heart and lungs, kidneys and blood were negative. The abdomen was very large and protuberant, and she had a large umbilical hernia. The hair was dry and coarse, the nose flat, the lips were thick, the skin was dry and harsh and cool to the touch, the teeth were poorly formed and decayed—there were 6 in the lower jaw and 5 in the upper. None of the second set had appeared. Her vocabulary consisted of a very few words, she was not interested in play and had no interest whatever in other children. She showed all the classical signs of cretinism. She was given a suitable diet schedule for a child of her age, and 1 grain of thyroid extract was ordered twice a day.

April 25, 1918. Weight 38 pounds.

Mother reported disposition was much better, appetite was still indifferent, bowels were regular with cascara. She could walk better and talk better and skin was warmer to touch, otherwise no changes.

May 10, 1918. Weight 38 pounds. Height 37¾ inches.

She had grown ½ inch in less than 1 month. Was much more active and interested in surroundings. She was more inclined to talk and the general facial aspect had changed for the better.

June 18, 1918. Weight 36¾ pounds. Height 38 inches.

Mother reports that child has shown a tendency to irritability, a condition previously unknown. Appetite and bowels satisfactory. On account of irritability and loss in weight, the thyroid was reduced to ½ grain twice a day. Child has improved greatly in appearance.

October 8, 1918. Weight 44¾ pounds. Height 40 inches.

Disposition very much better, talks very well, and wants to play and is generally active. Appetite and bowels satisfactory. Since last visit she had been taking ½ grain of thyroid 3 times a day. General condition was satisfactory, mentally and physically. The shape of face and expression had changed materially for the better. Takes an active interest in surroundings, and attempts to dress herself. She shows interest in other children and wants to play with them. Treatment was stopped for a few days at intervals during summer because patient became restless and nervous.

December 3, 1918. Weight 47 pounds. Height 40¾ inches.

Disposition normal. Speaks very distinctly and plays normally with other children and with toys. Doses of thyroid hereafter to be 1 grain, twice a day. Characteristic active physiognomy has disappeared. Might be looked upon by a casual observer as a normal child.

April 30, 1919. Weight 49¼ pounds. Height 43⅞ inches.

Improvement referred to above has continued. Progress satisfactory in every way. Complained of headache at intervals and was referred to Dr. Reese, who prescribed glasses for the following condition: there is about half the normal vision in each eye, and a high degree of hypermetropia. The optic nerves and blood vessels were normal. (Fig. 2 was taken at this time.)

It will be seen from the foregoing that there is an increase in height of 6⅝ inches and of 8¾ pounds in weight in 1 year and 13 days. The opinion has been expressed by many observers that not a great deal is to be expected from thyroid administration, when treatment is begun after the period of infancy. This child's mental improvement has been surprisingly great and has kept pace with the change for the better in her physical appearance. This can be readily appreciated by comparison of the 2 figures. It is difficult to realize that the figures represent the same child, from photographs taken 1 year apart. The change in

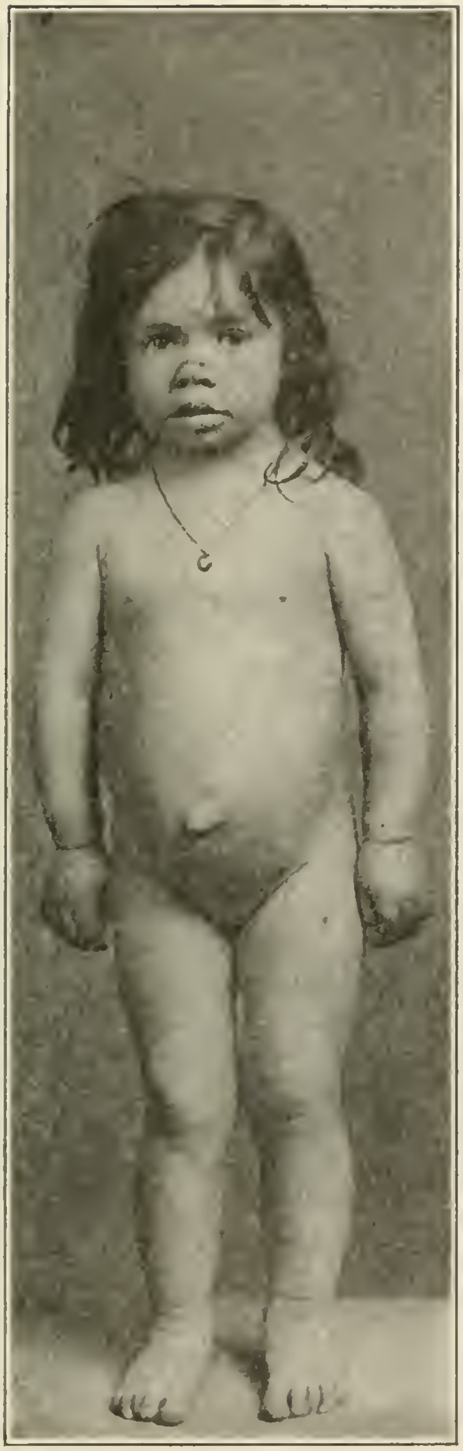

FIG. 1 Showing marked cretinism, with umbilical hernia and coarse hair. Age 8½ years, height 37¼ inches, weight 40½ pounds.

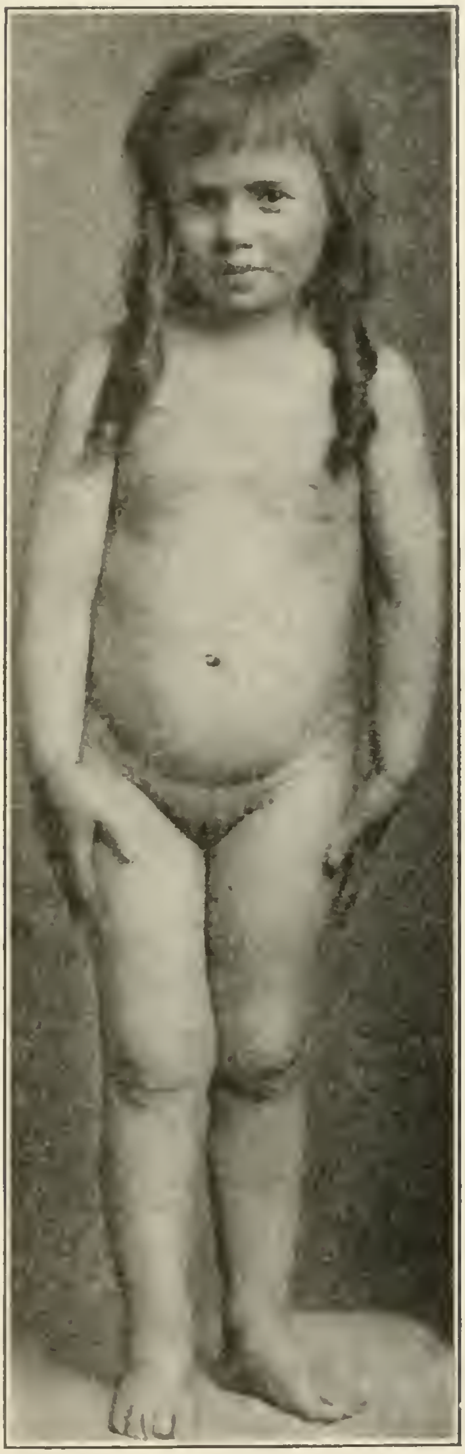

FIG. 2. Same case after one year's treatment. Note improvement in all physical signs. Height 43⅞ inches, weight 49¼ pounds.

the character of the hair, is most noticeable, and it is quite remarkable that the large umbilical hernia has been replaced by a very normal umbilicus, without any local measures by way of treatment.

132 *West* 81*st Street.*

VOMITING IN INFANTS. (Le Nourrisson, Paris, March, 1919.) Marfan calls the vomiting in the absence of any primary lesion in the stomach, the "disease of habitual vomiting in nurslings." It is evidently a nervous trouble; the gastric mucosa is unduly sensitive, and after each feeding there is a gastro-spasm and the stomach casts up more or less of its contents, breast milk or artificial food, as the case may be. It is a gastric neurosis, which explains the variability of the findings in the chemistry of the stomach and of the stools. If the spasms include the bowel there is constipation. Excessive swallowing of air may complicate the clinical picture. Infants inclined to habitual vomiting generally display a neuropathic tendency. Sometimes a complete change of environment may prove effectual where all else has failed, although the improvement may be only temporary. In other cases, treatment as for inherited syphilis gave sometimes surprising results. The vomit in these cases is usually a colorless fluid, made up of the whey of the milk, swallowed saliva and gastric juice, with floating clots of milk, as the vomiting does not occur at once, not until after fifteen or thirty minutes or an hour or an hour and a half or more after the feeding. The vomiting may occur without effort, or the child may be restless and scream and appear relieved after the vomiting. Sometimes abruptly moving the child may bring it on.—*Journal A. M. A.*

THE OCCURRENCE OF ACETONURIA IN CHILDREN*

By Joseph Garland, M. D.

House Physician, Massachusetts General Hospital

The following paper does not in any way pretend to explain old theories or advance new ones concerning the subject of acetonuria and acidosis. It is written solely for the purpose of providing some sort of an index of the normal occurrence of acetonuria in sick infants and children, and to show the type of disease with which it is most associated. It is not, and cannot be strictly accurate, since it embraces a period of 3 years during which the laboratory work of the service was done by a number of different individuals, and also includes the period of the influenza epidemic when all laboratory work was rather hastily and not always accurately done. It is, therefore, reasonable to suppose that the actual occurrence of acetone in the urine should be considerably greater than is shown by these records. No differentiation is made between the occurrence of acetone, diacetic, and beta-oxybutyric acids, for the relatively more frequent occurrence of acetone depends on the greater delicacy of the sodium nitroprusside test over the ferric chloride test for diacetic. The test for acetone is, consequently, used for a standard, simply to denote the presence of the açetone bodies as a group.

These statistics are taken from the records of 734 consecutive cases admitted to the Children's Ward at the Massachusetts General Hospital during the years 1916 to 1918. Of these cases, 127 or 17.3 per cent showed acetone in the urine at one time or another, but generally during the first 1 to 6 days. The temperature in this group of 127 cases varied from 99.8°F, the lowest in a case of malnutrition, to 110°F, the highest, the terminal temperature in a case of tuberculous meningitis, which was admitted with a temperature of 100°F. Every one of the series of cases, therefore, showed some elevation of temperature. It is also interesting to note that of this number only 2 were discharged with the unqualified and sole diagnosis of acidosis. In 3 or 4 more a questionable diagnosis of acidosis as a complication was made. Acetonuria, though it might theoretically be called an acidosis, comes far from representing the true clinical disease of acidosis.

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* From the Children's Medical Department of the Massachusetts General Hospital, Boston, Mass.

The following list shows the diseases in which acetonuria was present in this series:

Respiratory infection	55 or 43.3%
(Temp. from 100°-107°F; acetone present for from 1-6 days.)	
Intestinal disturbances, all types	14 or 11 %
(Temp. 100°-104°F; 2 cases of typhoid.)	
Nephritis, chronic and acute	8 or 6.3%
(Temp. 99.8°-105°F.)	
Miliary tuberculosis	7 or 5.5%
Pyelitis	6 or 4.7%
(Question of kidney abscess in one case.)	
Miscellaneous, divided as follows	37 or 29.2%
Tetany	4
Convulsions, Cause not Stated	3
Tuberculous Peritonitis	3
Otitis Media	3
Acidosis	2
(acetone 2-3 days; temp. 100°-105°F.)	
Status Lymphaticus	2
Spastic Paralysis	2
Tonsillitis	2
Acute Endocarditis	2
Hypernephroma	1
Pott's Disease	1
Chronic Meningitis	1
Retro-Pharyngeal Abscess	1
Post-Diphtheritic Paralysis	1
Hydrocephalus	1
Malnutrition	1
Tuberculous Meningitis	1
Rachitis	1
Post-Anesthesia	1
Infectious Arthritis	1
Anemia	1
Purpura	1
Encephalitis	1

In the vast majority of these cases, acetone was present for only one day, that of admission; the longest time during which it remained constant in the urine was 6 days, in a case of pneumonia with a temperature which remained constantly between 103.5° F.

and 105.5° F. for 14 days. No means was taken to combat this except the routine of forcing of fluids and carbohydrates, mostly in the form of glucose and lactose. One case, recently on the ward, taken from the surgical records, shows a true post-operative acidosis. Operation was performed for hernia in scar, on a healthy girl of 2½ years. The day following the operation the temperature went to 102° F., the white count was 20,000, acetone was present in the urine, and the child showed marked symptoms of air hunger. The alveolar air showed a moderately diminished CO_2 tension of a little less than 30. Sodium bicarbonate was given by mouth and glucose by rectum and sub-pectorally. In 24 hours the air hunger was gone, and in 3 days acetone no longer showed in the urine. Sugar was forced to such an extent in this case that it appeared in the urine 5 days later, but immediately disappeared again.

This percentage of routine cases, showing acetonuria, is obviously extremely conservative when compared with the statistics of Frew (*London Lancet,* 1911, ii, 1264) in which acetone bodies were found in the urine of more than 60 per cent of 662 consecutive patients. In these cases it was undoubtedly especially looked for; in these it is simply taken from the records of cases routinely examined.

Summary: 1. Acetone was found in the urine of 127 or 17.3 per cent of the cases admitted to the hospital ward.

2. Its occurrence was much more frequent in the respiratory diseases than in other diseases.

3. Although 127 patients had acetone in the urine, out of this number only 2 had true acidosis. Acetonuria, therefore, is a common clinical finding, whereas acidosis is relatively rare.

4. Acetone is more frequently found in the urine during fevers than at other times.

5. Since acetone is formed from fat during the early stages of respiratory diseases especially, it is wise to give a diet which is low in fat and high in carbohydrates, thus diminishing the possibility of acetone formation. Large amounts of liquid are also especially indicated to wash waste products out of the body.

ACETONURIA AND CYCLIC VOMITING IN CHILDREN

By James Hoyt Kerley, M.D.

New York

While acetone is present in very small quantities in the urine of healthy children, and may be found to a marked degree in any metabolic disorders, and febrile diseases of childhood, such as diabetes mellitus, acidosis and inanition, there is a very common type of metabolic disturbance, in which it is found in large amounts and which is of interest alike to the pediatrician and the general practitioner. I refer to the repeated and periodic attacks of fever with nausea and vomiting which seem to be peculiar to a certain type of child of a rheumatic or lithemic diathesis and belonging to an acid syndrome group characterized by a defective fat and sugar metabolism. They are for the most part offspring of a neurotic ancestry, whose parents and grandparents have led indoor and sedentary lives (i. e. bankers, lawyers, clergymen, and doctors) in contrast to those who have lived a rugged out-of-door existence (i. e. farmers, mechanics, and laborers.

These outbreaks are seen most frequently between the ages of 2 and 10, and affect both sexes equally. They have oftentimes no relation to diet, and may be induced by some entirely distinct ailment as tonsillitis or otitis media, though frequently the attack may come as out of a clear sky while the child has been doing well, and is apparently happy and contented. A child of this type has often, however, a coated tongue, and the breath many times has the sweet fruity odor of acetone. There may be prodromal symptoms of languor, headache, and loss of appetite, and an offensive breath, or the first thing noticed may be that the child seems warm to the touch, and the thermometer reveals a temperature of 102 or 103 degrees. The acute rise in temperature is attended, or soon followed, by nausea and vomiting often with considerable retching.

The stools may be normal at first but in from 12 to 24 hours become loose and green, mixed with mucus, and have a very foul odor. There is complete loss of appetite, but usually a marked degree of thirst is present. The child is drowsy, apathetic, takes no interest in the surroundings, and objects to being handled. The breath has a strongly acetone odor which is often first noticed by the patient's attendant. The duration of the attacks is usually from 3 to 5 days, with cessation of vomiting at the end of 24 to 48 hours, at which time the child appears very weak, and acts as though thoroughly exhausted.

There is a marked loss of weight, children of 2 to 3 years of age losing 1 to 2 pounds in less than a week. From then on, however, the convalescence is rapid, manifested first by returning desire for food and increasing irritability on the part of the patient, if every wish is not complied with, followed by disappearance of the acetone breath, and the coating of the tongue.

The treatment during the acute stage is the alkaline one. An alkaline carthartic as milk of magnesia in tablespoon doses repeated once daily for 3 days for a child of 3 to 4 years is an effective purge. A colon irrigation of a quart of water containing a tablespoon of bicarbonate of soda to the pint is indicated at least every 12 hours, and if the prostration is severe every 8 hours, as a considerable quantity of the solution is absorbed thus serving the double purpose of flushing out the intestine, and furnishing the organism with fluid and the frequently much needed alkali to counteract the acid intoxication present. Bicarbonate of soda by mouth in 10 to 15 grain doses dissolved in four ounces of water, and given every hour or every 2 hours seems to shorten the duration of the attacks. All food should be withdrawn during the acute stage, except a broth or gruel diet, later to be followed by skimmed milk and cereal feedings, gradually reverting to the full schedule.

The diet between attacks plays a very large part in regulating and preventing further outbreaks. As acetone with diacetic and oxybutyric acids are by-products of a defective metabolism of fats, and as fat metabolism goes hand in hand with carbohydrate metabolism, we must endeavor to withdraw as far as possible the fats and sugars. A diet appropriate for a child of this type of 4 or 5 years of age would consist of cereal with skimmed milk or fat-free milk, or buttermilk (for the morning meal), to which may be added bacon, and minced chicken. To satisfy the child's craving for sweets, maple syrup may be used occasionally over the cereal instead of milk, for, while cane sugar predisposes to subsequent attacks, the malt sugars are much better handled and do not seem to do this.

For the midday meal, meat or fish may be given every day, consisting of steak once a week, chop twice a week, and the rest of the time poultry or fish. Potato is also given daily with a green vegetable followed by stewed fruits or rice, bread or tapioca pudding.

As these children are of a neurotic temperament, an afternoon rest of from 1 to 1½ hours is to be insisted upon.

For the evening meal, cereal again with skimmed milk followed by custard, cornstarch or junket, or instead of milk, occasionally cocoa made with skimmed milk, or malted milk complete the schedule. All sugar is to be reduced to a minimum. Butter is to be used very sparingly. As egg in its metabolism yields highly acid end-products, the fat of the yolk being especially injurious, it should not be given more than once or twice a week. As most of these cases take orange juice badly, prune juice should be given in its place after the morning meal.

Raw fruit, likewise, does not agree with many children of this type, so that if the attacks tend to recur, or are severe, their omission is indicated.

During the interval between attacks, bicarbonate of soda in 10 to 15 grain doses given for 10 days, followed by a 5 day interval free from treatment may be kept up for several months. This, combined with the low fat and low sugar diet, and proper attention to the general routine of the child's life, with the aim of preventing any undue mental or physical stress or excitement, will do much to ward off future outbreaks.

CONCLUSION

Children of a certain constitutional peculiarity, manifested by a rheumatic tendency, and having usually a distinct neurotic inheritance are very prone to periodic attacks of fever with nausea and vomiting. The physiological defect appears to be a poor fat and carbohydrate metabolism. The proper treatment for the attack itself is an alkaline one, while in the interval a diet, low in fats and sugars, combined with careful attention to the usual régime of the child's life, does much to prevent recurrences.

TWO CASES OF GONOCOCCAL PERITONITIS IN YOUNG GIRLS UNDER PUBERTY*

By W. P. Northrup, M.D.

New York

In 1903 was published the history of "Two Cases of Gonococcal Peritonitis in Young Girls Under Puberty; One simulating Appendicitis; Operated." Read before the Association of American Physicians and published in full in Archives of Pediatrics, Vol. XX, page 910 (December, 1903), also in abstract in the Transactions of the Association of American Physicians. Vol. XVIII, 1903.

Now in 1919, the question asked as to the prognosis is at last answered. Is a girl thus afflicted able to bear children? Of the 2 girls, both married, one has died of diabetes, the other has borne a child.

Briefly the history is of an infection of a virulent strain of gonorrhea, contracted from an adult in the family.

The onset was exceedingly abrupt, pain was intense in the abdomen, marked tenderness, severe pain on micturition, localized pain and sensitiveness in the right iliac fossa, moderate abdominal distension, vomiting (once), ghastly pallor, severe prostration, extreme relaxation, temperature 104½°F. These adjectives are strong, but not too strong. The onset can best be described by the rhetorical "bolt from the skies."

In 6 hours there had been a consultation with Dr. Woolsey; the child had been taken to the Presbyterian Hospital, and an operation begun. It is not often that one sees the lesion at this time and the lesson may serve more than those men present at the time. Suffice it here to refer to the original and repeat that the one striking appearance was that of intense injection of the vessels described as an "arborescent injection"; the whole peritoneum, especially about the cecum was blood red. But little straw-colored fluid was present in the peritoneum. The appendix was removed; the ovaries and tubes not touched, they were injected, however, like the rest of the peritoneum.

Recovery was prompt, both from the operation and from the peritonitis. The surviving interest in the case resided in the question whether the young girl could bear a child. That question has now been answered. The sister died of an intercurrent disease.

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* The present communication being an answer to the question: "Can these girls bear children?" Answer after 16 years.

61 *East 73rd Street.*

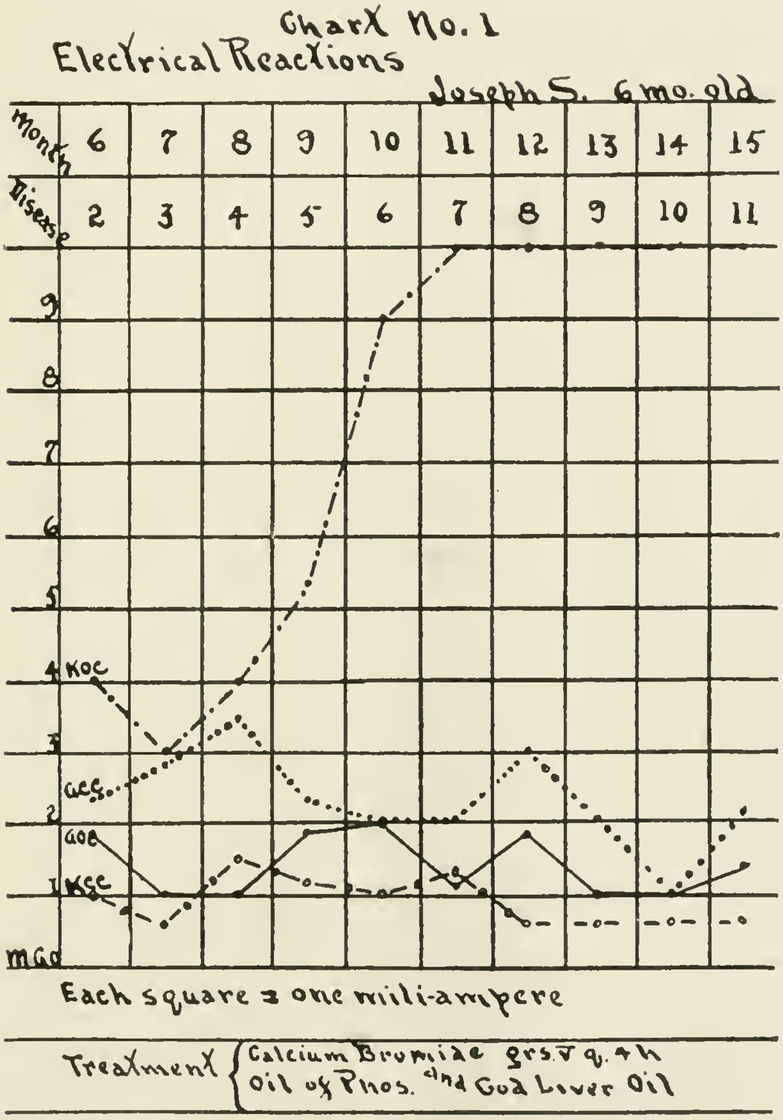
ARTIFICIAL PNEUMOTHORAX IN TUBERCULOUS PNEUMONIA (Am. Rev. Tub., 1918, V. II, No. 8). H. F. Gammons reports a case treated by artifical pneumothrax which showed tuberculous pneumonia on the left and a few scattered râles in the right lung. The manometer showed a free pleural space with negative pressure. Twelve injections of air were given from April 27 to July 2, in quantities of from 300 to 650 c.c. and iron citrate hypodermically every other day. The temperature immediately dropped from 102.6 to normal and remained so with a few exceptions of a fraction of a degree elevation. Cough and expectoration began to diminish gradually. At the time of the report cough and expectoration were absent, haemoglobin was 85% and red cells 6,000,000 per cmm. The patient walked to meals. Physical examination showed complete collapse of left lung and slight displacement of the heart on the right. The right lung was apparently inactive. Weight 125 pounds. It was felt that the pathological condition did not offer a mechanical barrier to complete collapse and stoppage of lymphatic circulation and that the infection probably followed an eruption of numerous caseous tubercles into the bronchial tubes of the left side from which by gravitation and aspiration the bacilli were scattered in all of the alveoli of the lung at the base. As a prophylactic measure for ulcerative cases, especially bed cases with profuse expectoration, postural treatment to favor drainage would seem to be a logical procedure.—*Am. Rev. Tub.*

DIAGRAMMATIC CHARTS OF ELECTRICAL REACTIONS IN TETANY*

By John S. Weitzel, M.D.

Richmond, Va.

As has been previously demonstrated, the electrical reactions in both latent and acute tetany offer information that cannot be gained otherwise and a concise method of studying these reactions, by comparing the daily variations, offers considerable satisfaction.



It is pointed out by Holt, Brown, and others what our electrical findings usually are, but in the few cases here recorded one will notice that the A.O.C. never became greater than the A.C.C. except on the 14th day of the disease in Baby M. Chart 3. This however could have been due to slight changes in the temperature or permeability of the skin. One will notice that the K.O.C. is the first pole to show marked improvement, following in a corresponding path, a few days later, the A.C.C. is noticed to ascend, and lastly the A.O.C. which soon registers above 5 milliampere.

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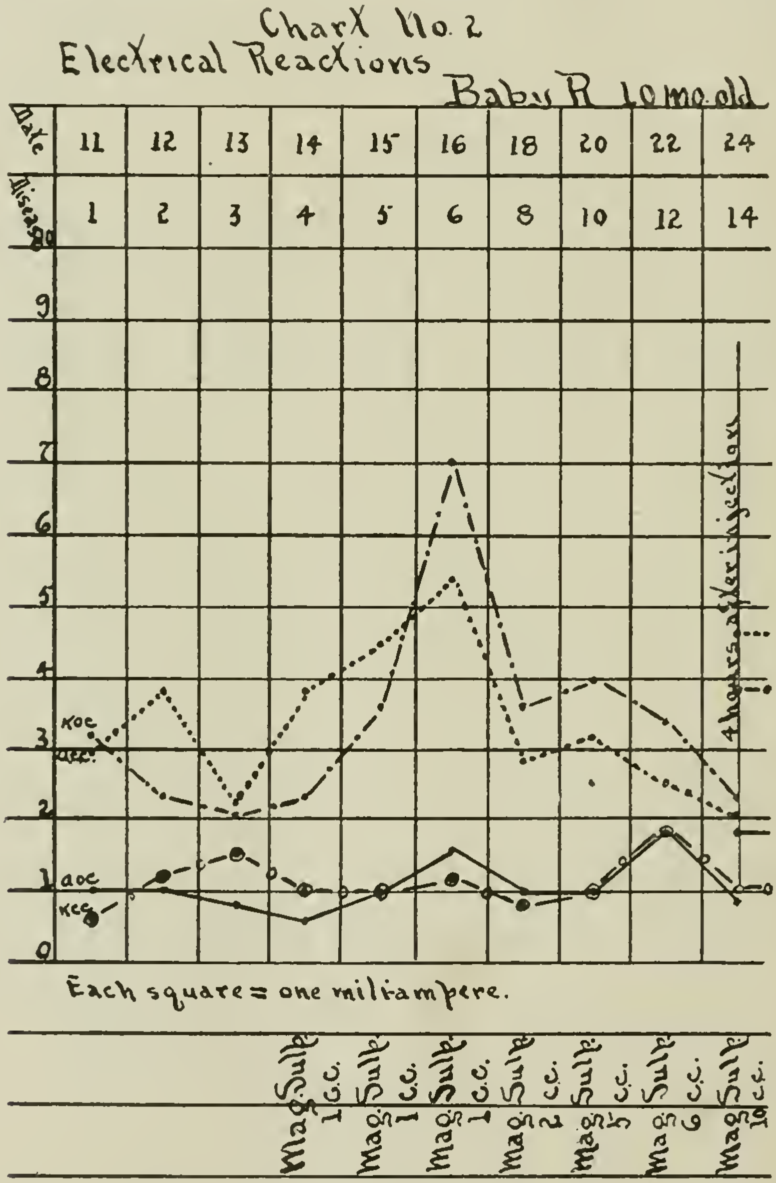
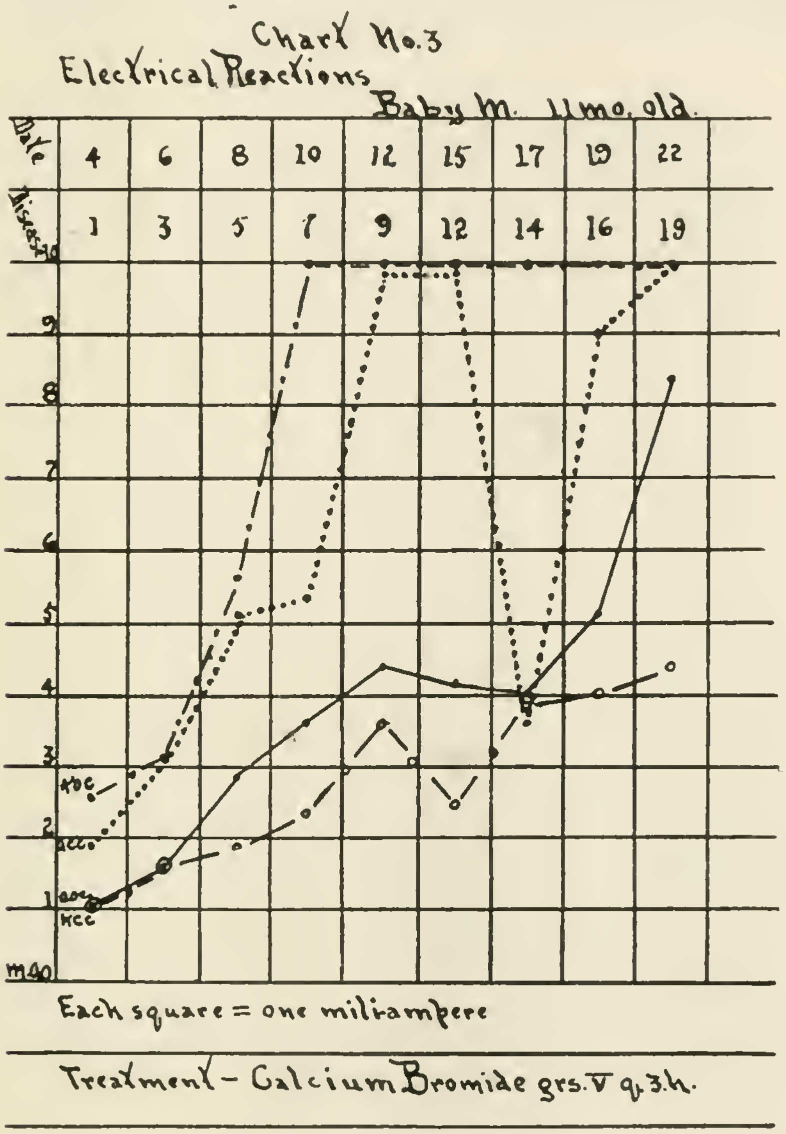
* From the New York Nursery and Child's Hospital.



So many facts enter into the recording of accurate findings it might be of interest to mention several conditions entering into more accurate technique.

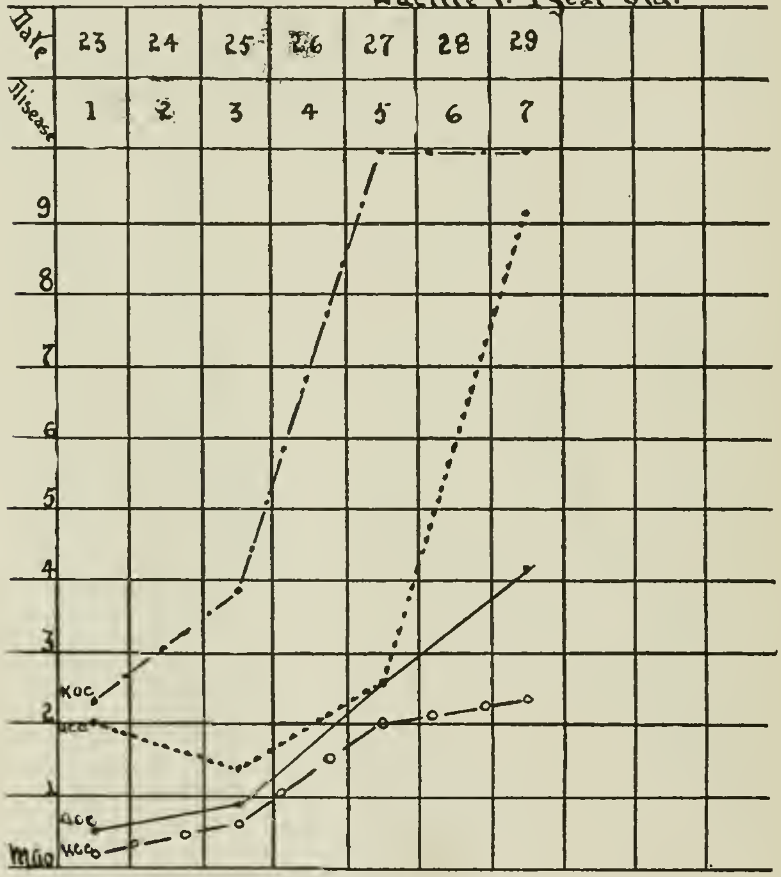
The external popliteal or peroneal nerve, as has been previously used, seems the most satisfactory, due to superficial location and the fact that a reaction, however slight, can be elicited by holding the foot loosely, a reaction which may hardly be perceptable to the eye. The skin in turn must be well moistened as well as the sponge, and the galvanic current passed through the nerve several times causing slight hyperemia of the skin. Care should be taken not to record ones findings as true if the current has been continued sufficiently long to cause muscle exhaustion, for a rest of a few minutes will frequently give a strong reaction with the same amount of current.



In the 4 accompanying charts the foregoing points are demonstrated. In addition, 2 other facts are noted.

In chart No. 2 (Baby R), on the 6th day of the disease, one will notice the corresponding increase in all poles, which in the course of 48 hours returned to the same findings as 3 days previous. On the 5th day of the disease this child was taken with an acute intestinal upset, having 8 to 10 stools a day. Apparently the excess of sodium and potassium being eliminated at this time caused a temporary improvement in the electrical reactions, for promptly on return of the stools to normal, the reactions were found practically the same as 3 days previous. One other interesting point in this same chart is the immediate effect of magnesium sulphate intramuscularly on the electrical reactions. On the 14th day of the disease, 4 hours after the intramuscular injection of 10 c.c. of 8 per cent magnesium sulphate solution, the changes were found as represented in chart No. 2. It was indeed unfortunate that this child was obliged to be discharged on the 15th

Chart No. 4
Electrical Reactions
Lucille T. 1 year old.



Each square = one mili-ampere

Treatment - Calcium Bromide grs. V q. 3h.

day, thus preventing further observation. However, a report from the mother supplies us with the fact that 2 days after discharge all spasticity disappeared. It is true this may have occured regardless of treatment, even though the child had been under constant treatment for 3 weeks previous to admission; the fact remains however that some immediate effect on the electrical reactions is brought about by the intramuscular injection of magnesium sulphate.

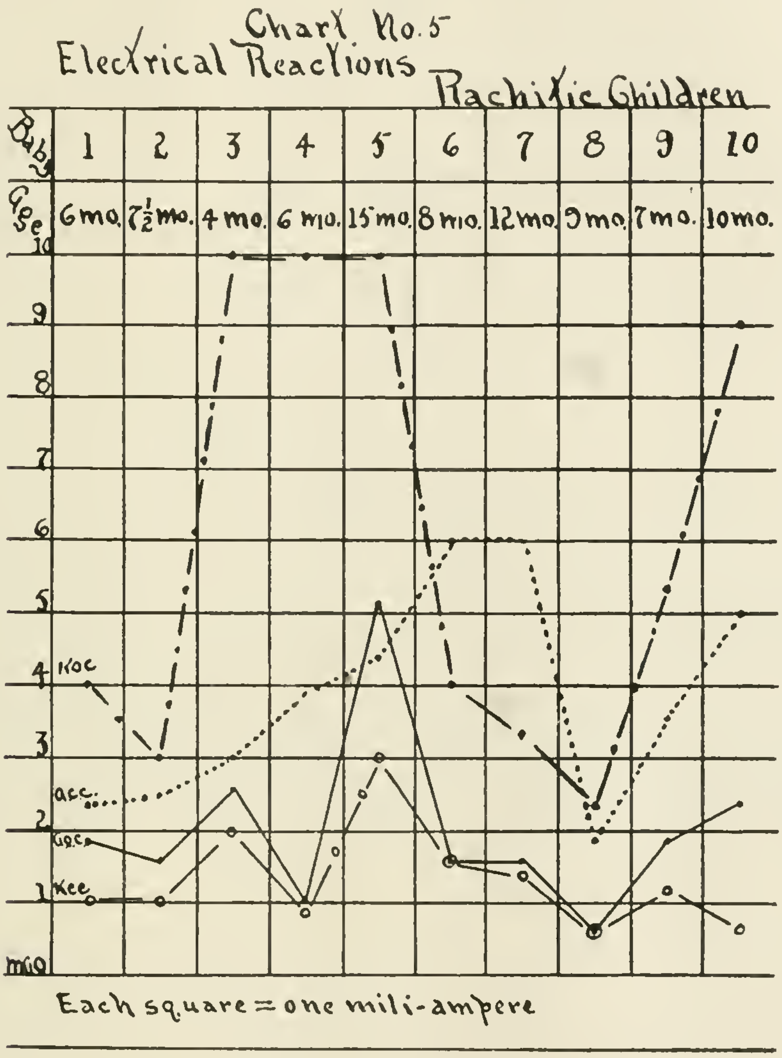


Chart No. 5 demonstrates the electrical reactions in 14 of 25 cases of marked rickets in children ranging in age from 4 to 15 months. Of the entire 25 all but 1 child (No. 5) showed evidence of latent tetany by the electrical reactions; this exception being 15 months old with very marked rachitic deformities. Ninety-six per cent therefore showed manifestations of latent tetany by the electrical reactions which substantiates the fact that latent tetany is a more frequent source of convulsions in rickets than gastrointestinal or some other obscure condition.

Professional Building.

OPEN PUNCTURE IN PLEURISY (Nederlandsch Tijdschrift-voor Geneeskunde, 1918, I, 1393). W. Hoogslag has never observed any untoward by-effects when he tapped the effusion in pleurisy and after evacuation of the fluid allowed air to enter the pleura through the open trocar. He has treated forty patients with this open puncture, and the disease was often shortened while thick adhesions seldom formed. The tendency to recurrence seems to be checked by the air in the pleura. The puncture is made at the lowest point as the patient lies on that side, and 2 liters or even 3½ liters were thus easily withdrawn in some cases. One Italian surgeon has applied this open puncture in 207 cases and lauds its advantages over other methods. Others have applied it with benefit in pericarditis with effusion. A trocar is used about 8 cm. long by 0.4 cm. in diameter. When all the fluid has escaped, the trocar is withdrawn during the deepest possible expiration, preferably during a cough, which expels some of the air. The patient lies on the side affected, close to the edge of the bed or better yet, lies across two bedsteads just far enough apart for the surgeon to stand between them. Hoogslag regards this as the simplest and most rational method for evacuation of a pleural effusion.—*Jour. A. M. A.*

MISCELLANIES

THE EDUCATION OF THE ORGANIC FUNCTIONS IN INFANCY.*

It is too common a belief that the organic functions unfold themselves automatically on correct and normal lines, apart from the influence of the environment. It is quite true that as a rule they do develop normally, but this is due to the fact that the conditions of the environment on which their evolution depends are generally normal also. The environment of the new-born infant is largely under the control of human intelligence; when this intelligence is wisely directed the results are good, when unwisely the results are bad. It is impossible to have any wide experience of the diseases of infants without frequently meeting with instances in which the digestive functions have been seriously disturbed, perhaps with permanent results, owing to faulty methods of feeding or management which have been applied during the first few days of life.

It must be remembered that most of the symptoms which are associated with digestive disturbances, such as vomiting, diarrhea, wind colic, and so on, are manifestations of faulty motor functions, and not necessarily due to any failure of the gastric, pancreatic, or intestinal ferments to play their physiological part in the processes of digesting food.

The neuromuscular mechanisms by means of which food is swallowed, churned in the stomach, and conveyed through the entire length of the intestines, are extremely complicated. They depend for their smooth working on the accurate coordination of a vast number of involuntary muscles, some of which are specialized to constitute regular sphincters, while others carry out the peristaltic functions. Over-action, perverted action, or incoordinated action of these mechanisms is very liable to result, if the wrong sort of stimulus is provided in the first instance. It is, in my opinion, impossible to exaggerate the importance of setting these mechanisms in motion in the right way at the beginning of life. The team work of the various groups of muscles concerned in the motor functions of the alimentary tract can only be perfected by constant repetition under the best possible conditions. Good habits of action can be acquired just as easily as bad ones, provided that the right experience and practice are afforded.

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* By Eric Pritchard, M.A., M.D., Physician to the Queen's Hospital for Children, London. From The Medical Press, London, March 19, 1919.

If, when a mechanism of this kind is first called into play, the stimulus which evokes it is too strong or otherwise faulty, the resulting action may be violent, spasmodic, or incoordinated, and this first display of function will very markedly influence the type of the second reaction, quite apart from the character of the stimulus which on this second occasion may be forthcoming. The first and second reaction will still more influence the third and determine its character. If any particular type of reaction has been impressed on a neuromuscular mechanism by the character of the initial reactions, a more or less permanent habit or bias of action will be developed which is usually difficult to disturb.

An infant who, owing to normal experiences, swallows his food during the first few days of life in a perfectly coordinated manner is not likely to develop any symptoms of dysphagia afterwards. On the other hand, if, owing to unsuitability of the food during the first day of life, with respect either to quantity or quality, an infant acquires a faulty habit of swallowing, the perverted function may remain permanently established, no matter what steps may be taken subsequently to correct the habit. I have met with several instances of incoordinated function of the esophagus which have been cured with the greatest difficulty, and which have been due to allowing the infants in question to swallow more food on the first day of life than they could properly manage, or to some other accidental circumstance. The form which this incoordination takes is usually what is called "rumination," that is, to say, a spasmodic closure of the cardiac sphincter which guards the esophageal opening into the stomach. Spasm of this sphincter leads to the retention of the food in a dilated esophagus, and the subsequent vomiting of food which has never really entered the stomach at all. In such cases the diagnosis is very liable to be missed unless a bismuth feed is given and an x-ray examination made.

The motor mechanisms of the stomach itself are far more liable to be wrongly developed than those of the esophagus owing to faulty feeding. Under normal conditions of breast feeding the gastric functions are favorably evolved owing to the splendidly adapted system of education which colostrum affords. Colostrum is accurately designed, both by reason of its small quantity and its very mildly stimulating qualities, to elicit the required motor response in the stomach. Colostrum, which requires no digestion, and which consequently does not evoke violent churning movements or contraction of the pyloric sphincter, changes gradually in the course of three or four days into ordinary milk, and so calls the normal functions of the stomach into play. Any attempt to short-circuit this gradual education process is almost foredoomed to failure. I constantly meet with cases of pyloric spasm in young infants which have been caused by giving unduly large amounts of diluted cow's milk during the first few days of life. The process of re-education after bad starts like these is always slow and difficult. I am prepared to say that any case of pyloric spasm, which can be subsequently cured, need never occur, and as I have seldom met with a case which has defied treatment, I am inclined to believe that they need rarely occur.

So-called wind in infants is nearly always due to dysperistalsis or spasm of some section of the musculature of the intestine, generally, I think, of the transverse colon. It is again usually due to faulty education or over-stimulation by excess of food, or by food of indigestible character. The spasm tends to become habitual, and to recur at the same time every day.

Constipation or looseness of the bowels is, again, largely a matter of education. Gross interference with the functions of the rectum and anus during the early days of life by the favorite dose of castor oil is likely to result in the establishment of faulty and incoordinated reactions. Meconium is designed by nature to educate the rectum in the functions of defecation, just as colostrum is designed to teach the stomach its duties. If meconium is discharged from the bowel at one fell swoop by this preliminary purgation, wherewithal shall the rectal and anal muscles learn and practice their periodic duties? Enough has probably been said with regard to the education of the motor functions of digestion to show how very important this part of the management of young babies undoubtedly is.

OIL ENEMATA IN INTUSSUSCEPTION.*

An infant, admitted to the writer's hospital for intussusception, had been subjected during the preceding 3 days to energetic but futile efforts to reduce it. He injected oleum rapae, introducing as large a quantity as would enter the bowel under a moderate pressure—a height of about one meter. He did this, not to distend the gut or to reduce the intussusception by direct pressure, but to convey a lubricant to the space between the opposed surfaces of the gut and thus facilitate its slipping back into the normal position. Thanks to this preliminary treatment, taxis under general anesthesia was rapidly successful, a few comparatively light manipulations of the abdominal swelling reducing the intussusception with the characteristic splashing sound. This success encouraged the writer to repeat the maneuver in other cases. He usually dispensed with general anesthesia, and for some years his successes were uninterrupted. Then he had 2 fatalities. But these merely indicated certain limitations of, and contraindications to, the use of oil enemata. The following were his 2 fatal cases:

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*J. Eschen (Ugeskrift for Laeger, December 7, 1918, p. 2146.)

An infant, aged 4 months, was admitted to hospital with an intussusception which had lasted 30 hours. The temperature was 105.5° F. A cylindrical swelling could be felt in the left abdomen extending up to the costal arch. Tepid oleum rapae was injected without general anesthesia, and on manipulation the swelling disappeared. But as partial persistence of the intussusception was suspected, light general anesthesia was induced, and the manipulations were repeated. Under this treatment the abdomen certainly became more flaccid, and a splash was heard, which was not, however, characteristic of the sound associated with the sudden and complete reduction of an intussusception. Still the hope was entertained that the manipulation had been completely successful. This was confirmed by the infant subsequently taking several feeds without vomiting. The temperature, too, fell somewhat during the night. But it soon rose to 103.8° F, no flatus was passed, and the patient became very flabbly. Accordingly, though no tumor was palpable, laparotomy was performed under general anesthesia about 18 hours after admission to hospital.

When the abdomen was opened by an incision slightly to the right of the middle line, several gas-distended coils of gut bulged forwards, dragging with them a long, flaccid, sigmoid flexure, the lymphatic glands of which were enlarged. The operation was difficult, and only after some searching was the ileocecal section of the gut located in the left iliac fossa. Here an ileocecal intussusception, 4 to 5 cm. long, was detected and replaced, after steady, concentric pressure had reduced the severe edema of the structures involved. Only slight adhesions had formed. The cecum was replaced in the right iliac fossa, and the rest of the intestines were pushed back into place after they had been punctured and sutured again at 3 points. Death occurred 3 hours after the operation. Owing to the displacement of the cecum and ascending colon, which had migrated to the left abdomen, the direction in which the abdominal swelling had been manipulated was wrong; and this fact betrays the faultiness of this as of all other methods of "bloodless" operation.

An infant, aged 6 months, was admitted to hospital with an intussusception. It had, apparently, developed a month earlier, when he had suffered for 3 days from stomach-ache. At all events, the intussusception had lasted several days; and for 5 days he had passed no feces, only a little mucus, followed by blood. He had gradually become worse, and had vomited and hiccoughed. The temperature was 99.7° F, and the abdomen was distended. About 250 grams of tepid oleum rapae were at once injected, and under light general anesthesia, a swelling, of the size of a hen's egg, to the left of the umbilicus, was massaged till it disappeared. In the evening of the same day the temperature rose to 102.7° F, and mucous, blood-stained stools were passed. Laparotomy was, therefore, performed, 8 hours after admission to hospital. A long ileocolic intussusception, extending as far as to the middle of the transverse colon, was found. It was difficult to reduce, and at one point the small intestine was discolored and grey. The appendix, which was thick and red, and which was included in the intussusception, was removed. The patient rallied for some hours after the operation, but collapsed after passing bulky, watery, offensive stools, and died 8 to 9 hours after the operation.

These 2 cases illustrate the dangers of working in the dark and of postponing an operation in the hope that manipulation, aided by injections of oil, may render more radical measures superfluous. The following case shows how this conservative procedure may be only partly successful.

A much neglected and emaciated child, aged 3 years, was admitted to hospital having suffered for the past fortnight from intussusception which had originally been diagnosed as coprostasis. The temperature was normal. In the left iliac fossa there was a kidney-shaped, boggy, freely movable swelling, of the size of a goose egg, extending upwards to the costal arch. There was a certain amount of meteorism. Considering the time the intussusception had lasted, the patient's condition was surprisingly good. For this reason, and because the correctness of the diagnosis was not established, the usual procedure with oleum rapae was not adopted. Sixty grams of the oil were, however, injected, and the foot of the bed was raised. In the following night, watery fluid, stained with blood and feces, was passed twice per rectum. Urine was passed involuntarily. The swelling could now be felt passing under the left costal arch. It disappeared altogether on manipulation, but without the characteristic sound and feeling of an intussusception being reduced. A large water enema was given and some fecal fluid was returned. On the second day after admission the temperature rose to 103.1° F, the patient looked languid and ill, and 3 watery but not blood-stained stools were passed. There was a certain amount of meteorism, and the swelling was no longer palpable. As the general condition was getting worse, laparotomy was performed.

At the operation about 12 cm. of the small intestine, a little distance from the cecum, were found to be very cyanosed, indicating that the gut at this point had recently been compressed. The cecum and lower section of the ascending colon were much infiltrated, and about 20 cm. of the ileum and cecum were invaginated. This condition was corrected by light manipulation, and the appendix was removed. The small intestine, which had prolapsed during this part of the operation, was now replaced, and large quantities of gas and liquid feces were emptied through a rectal tube by 2 fingers squeezing the small intestine from duodenum to cecum. The large intestine was emptied in the same way. The operation was followed by a fall of temperature and general improvement, but convalescence was delayed by severe diarrhea (very offensive stools) and by albuminuria. In the following case the effectiveness of an oil enema was verified by operation.

A child, aged 4 years, was admitted to hospital, suffering from occasional attacks of abdominal pain, which had lasted about 5 days. The abdomen was soft, the temperature normal. To the right of the umbilicus, a movable, very tender swelling, of the size of a hen's egg, could be felt. Two hundred grams of oleum rapae were injected, and the foot of the bed was raised. On the second day the temperature ranged between 98.6° F and 99.5° F, no flatus or feces were passed, but there was no vomiting. The abdominal swelling, which was now just under the right costal arch, seemed larger and softer than on the previous day. As it was being pressed downwards, it emitted a gurgling sound. On account of the abdominal tenderness a general anesthetic was given, and the deep palpation thus rendered feasible revealed a small, firm swelling in the right iliac fossa. While it was being firmly squeezed it suddenly slipped, as if the intussusception had been corrected, and at the same time a large quantity of tarry feces was passed. After 3 days, during which the temperature was normal, and there were only occasional bouts of umbilical colic, the escape of flatus ceased, and the stools became mucus and blood-stained. A small, slightly tender and just movable swelling could be felt all the time in the right iliac fossa. This, and the unsatisfactory condition generally, led to laparotomy under general anesthesia. No intussusception was found, but the gut in the ileocecal region was infiltrated and slightly puckered, and the terminal section of the ileum showed cyanosed patches. The rest of the intestine was somewhat injected. The appendix was removed, and the patient recovered.

Old cases, *i.e.,* of 4 days standing or more, do not usually derive benefit from oil enemata, but require an operation to restore the stiff and edematous gut to its normal state. But even in these cases oil may be given a short trial. Its use on these occasions is the more justifiable as the statistics for operative treatment, under taken at once, show a mortality ranging from 37 to 66 per cent. When an operation is performed, the opportunity should be taken to remove the appendix, for apart from its potentialities as a focus for inflammation, its removal leaves a scar which acts as a check on a recurrence of the intussusception.

Statistical evidence suggests that manipulation alone is less fatal than an operation, but the fallacies of such a comparison are obvious. Of the writer's 14 cases, in which manipulation was given a trial, only 2 proved fatal. Monrad has recorded 45 cases in 37 of which manipulation was effective, although 3 terminated fatally. It was ineffective in 8 cases, 7 of which terminated fatally. He advocates complete general anesthesia, and though he sometimes uses considerable force in attempting to squeeze the intussuscepted gut back to its normal position, he does not continue manipulating it for more than 15 minutes. He completes this maneuver by injecting a large quantity of water, and he repeats this enema once or twice, if the first injection yields no feces. In skilled hands this conservative procedure shows a mortality of 22 per cent. (Monrad). The practitioner lacking experience and skill is not, however, likely to achieve such a result. An inducement to attempt manipulation after an oil enema is the prospect of doing no harm provided great force is avoided, and preparations have been made for instant laparotomy under the general anesthesia already induced. Even if the oil has failed of its original object, it will facilitate the liberation of the gut when exposed by operation. If an intussusception has been reduced by manipulation, but an infiltrated section of the gut can still be felt in the right iliac fossa, recurrence may be prevented by bandaging the abdomen firmly over a pad pressing upon the right iliac fossa.

THE SERUM TREATMENT OF LOBAR PNEUMONIA.*

The successful treatment of lobar pneumonia with a serum depends on several factors. There must be available a serum, rich in antibodies, for the specific race of pneumococcus exciting the lesions, and such a serum must be able to reach the organisms in time and in sufficient concentration to prevent them from harmful development. The bacteriology of lobar pneumonia differs considerably from that of bronchopneumonia.

Up to the pandemic of last year, the clinical signs that determined the presence of lobar pneumonia, practically also determined the presence of some variety of pneumococci as the dominant organism, so clear-cut were the physical signs which the pathogenic pneumococci usually produced. In bronchopneumonia, streptococci, influenza bacilli and other forms of bacteria were found to be dominant in about 50 per cent. of the cases. Since the pandemic, we have had fewer clear-cut cases of lobar pneumonia and of bronchopneumonia. Even in clinically typical cases of lobar pneumonia, the influenza bacilli and the streptococci are apt to be mingled with the pneumococci.

Years ago, when the pneumococcus was first isolated, it was supposed to be a definite single variety of bacterium. Later it was found even on cultural and morphological lines, there were at least two distinct varieties. Later, immunological studies showed that not only the two varieties reacted to different immune bodies, but that further divisions were necessary. Indeed, it was found that there may be hundreds of strains of pneumococci, each one responding to different antibodies. Under ordinary conditions, in any one locality, it is found, however, that some 2 or 3 types only are present, respectively, in the great majority of all cases, so that if we have effective serums for these types, we may hope for practical therapeutic results.

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* By Wm. H. Park, M.D., Director, Bureau of Laboratories. From the Monthly Bulletin of the Department of Health, City of New York, April, 1919.

It has been found, however, and this is an extremely important practical differentiation between the types from the standpoint of treatment that with our present methods of testing, some excite by their injection into suitable animals, abundant antibodies, while others do not. The reasons for this we do not understand. The most recent and most thorough investigation concerning the value of the specific serum for pneumonias due to each type of organism has been carried on by Cole and his associates and the present favorable outlook for treating a certain proportion of pneumonia cases is largely due to their work.

Cole judged from the examinations made by him and by those working in coöperation with him, that in the United States about 75 per cent. of all lobar pneumonia cases are caused by pneumococci of 3 types, which are numbered I, II and III. The other 25 per cent. are caused by a multitude of strains so numerous that in a moderate number of cases no repetition of the same type is apt to be met with. These last are grouped together under the heading Group IV.

Lister, working in South Africa, found that a distinctly different type of pneumococcus was the most prevalent there. He called this Type A. So far, this type has not been found in the United States. He also found the Cole Type I (his Type C) and Type II (his Type B) in quite large numbers and several other types in smaller numbers.

Later, studies by Olmstead, Stillman, and others have shown that the Type II group in this country is divided into several subtypes.

We see that it is essential for investigators in each country to continue the study of the serologic reactions of strains of pneumococci isolated at different times in order to be sure that the type prevalent in earlier periods or in some other place is the prevailing type.

We are just having a marked example of the importance of such a study. With occurrence of the pandemic of last fall, the proportion between the different types in this country has utterly changed; instead of Types I and II making one-half to two-thirds of all the cases, they have been present in less than 20 per cent. Not only have the results in the Research Laboratory from typing the sputum sent in for diagnosis to determine whether to use the Type I serum or not, shown this small proportion of Type I cases, but also those testing the sputums in the various hospitals have had the same results. Our results during the past five and one-half months show that if the serum was used without typing, less than 10 per cent. of the cases would have received the useful serum.

An interesting observation has been made on cases coming in on different vessels. The pneumonias have been quite frequent among the returning troops. In some vessels, all the pneumonias were due to Type I infections, while in others Type II, Type III and especially those of the Group IV class dominated the situation. In New York City the use of the pneumococcus serum during this past winter had been greatly diminished through this extraordinary increase of the Group IV organisms. Studies are now being made at the Research Laboratory to see whether any special strain of the Group IV is becoming prevalent so that a serum against such an organism might be prepared, if possible, or against several such organisms if several strains are showing a tendency to be more prevalent. Incidentally, such strains might be incorporated in a vaccine to be tested for its worth in preventing pneumonias from these organisms.

In the work at the hospital of the Rockefeller Institute, it was shown that only the serum of horses, inoculated with Type I pneumococcus, produce abundant immune bodies. Type II produces only about 10 per cent. as much as Type I and Type III still less. The strength in protective bodies is measured by injecting mice with a definite dose of virulent pneumococci together with a definite amount of serum.

The identification of the type of pneumococcus is made by injecting the fresh sputum into the peritoneal cavity of a mouse and

and after 6 to 12 hours, washing out the peritoneal cavity and testing the agglutinating characteristics of the greatly multiplied pneumococci. Contaminating bacteria generally lessen in number rather than increase.

This test is usually successful in the hands of experienced workers and requires 8 to 14 hours for its completion. The test in the hands of those who are inexperienced is apt to fail entirely. Several mice should be injected from each specimen to insure a successful result. If specimens of abundant sputum, rich in pneumococci are sent in, the precipitin test may be made directly and the result told the physician within half an hour. This test is almost always successful with sputums from Type I case.

Cole's, Longcope's, and Richardson's statistics of the frequency and the mortality of pneumonia due to the types are of great practical interest. These were from cases occurring before the influenza epidemic.

Methods of Giving Serums.—The experimental work in animals and the observation of cases has led to the general use of larger injections and the substitution of the intravenous for the subcutaneous method. The size of the patient and the strength of the serum in antibodies have not been considered in controlling the size of the dose, although all accept the fact that, theoretically, they should. The serum should be standardized, as in the case of antitoxins, 0.2 c.c. of a recent serum should protect against 100,000 f.d. of a very virulent Type I strain of pneumococcus and serum should seldom be put out or used that contains less than half this strength.

As a rule it is better to dilute the serum with an equal quantity of sterile saline solution though this is not absolutely necessary. The average dose for an adult is 100 c.c. The dose should be repeated every 12 hours, or if precipitable specific substance is present in urine, preferably every 6 to 8 hours, till an effect is obtained. From 200 to 500 c.c. of serum may be needed in the treatment of a case. The injection should be repeated, especially if there is a beginning rise of temperature after a fall subsequent to the administration of the serum. One danger confronts the physician, viz., a sudden reaction evidenced by suffusion of the face, restlessness or uneasiness, increased pulse rate, difficulty in breathing, urticaria and more rarely serious collapse, with the possibility of a fatal outcome. This can be guarded against in several ways. One way is to precede the injection by an hour or two with an intracutaneous injection of serum. If the patient is sensitive a local edema and erythema develops. If a reaction occurs especial care is necessary in administering the serum. It is also suggested that 0.5 to 1 c.c. of serum be given subcutaneously several hours before the larger intravenous injection. This tends to "de-sensitize" the patient if sensitive and render the administration safer. Each of these procedures means a loss of time, however. Where the serum is strongly indicated, the possibility of harmful effects may be reduced to a minimum by allowing the first few cubic centimeters to enter the vein very slowly and then interrupt the administration for several minutes and then allow an additional few cubic centimeters to flow in, at least 15 minutes being taken to administer the first 15 c.c. If no reaction is encountered, the rest of the serum and subsequent injections may be given without fear.

The serum as it enters the vein must be at body temperature or chills are more apt to follow.

A second form of serum reaction consisting of chilliness or a distinct chill and an abrupt rise and fall of temperature, may come on during or after the injection. Some difficulty in breathing or cyanosis may occur. This reaction is similar to that elicited by the intravenous injection of vaccines or other foreign proteins and cannot be adequately guarded against.

Serum sickness will follow after some days or after a week or two in many cases. In most instances this will be nothing more than an uncomfortable urticaria. Edema of the skin, joint pains and glandular enlargement and a rise in temperature may accompany the rash. The rise of temperature is important, as it should be ascribed to the serum only after possible complications are carefully excluded.

In order that comparative results should be obtained, it is necessary to have all antipneumococci sera labelled as to the strength and nature of antibodies and the date of the last potency test. The serum used should have been tested within 6 months, for it gradually deteriorates.

Cole recommends that the serum be only given in a case after the bacteriologic test has shown the type. This is undoubtedly correct at the present time when only about 10 per cent. of the cases are due to Type I. Previously, 25 to 33 per cent. of cases had been found to be due to this type. I believe, in severe cases, a first dose of Type I serum should be given as soon as possible and the later injections only after the bacteriologic report. Outside of hospitals, Cole's plan means in most cases a delay of at least 24 hours, and frequently prevents the use of serum altogether.

It is understood that the severe cases which receive an injection of Type I serum and from which no bacteriological report is received cannot be considered as having any value in forming an opinion of the effect of the treatment; thus, if Dr. Longcope had treated all this cases with Type I serum and had not indentified the infecting type in each of the 22 deaths among his 52 patients, he could have had no conception of the value of the serum, for only one of the deaths and 13 of the cases were due to the Type I organism.

The fact that such really promising results have been obtained in cases due to Type I leads us to hope that Wadsworth, Cole, ourselves and others will succeed in their endeavors to get a therapeutically valuable serum for Types II and III, and possibly so concentrate the antibodies as to use a combined polyvalent serum.

Results of Large Intravenous Injections of Specific Serum in Type I Infections.—There is in about 30 per cent. of the cases an almost immediate more or less severe chill with a considerable rise of temperature which lasts for a short period. This occurs usually after the first, but sometimes after the later serum injections. If the blood contained pneumococci, they disappear within 12 hours after the injection. The temperature usually rapidly falls after the initial rise to a point lower than before the rise and the symptoms, as a rule, improve sooner than the average untreated case of equal severity. Serum sickness, with rashes, painful joints, swelling of lymph glands and other symptoms occur to a greater or less extent in about 50 per cent. of the cases during convalescence. The serum sickness, while it lasts, is very annoying, but not dangerous. The mortality up to the present time has been considerably less in the treated Type I case than in those untreated.

DEPARTMENT OF ABSTRACTS

HILL, LEWIS WEBB: THE ETIOLOGY AND TREATMENT OF THE DIARRHEAL DISEASES OF INFANCY. (The Journal of the A. M. A., June 7, 1919. p. 1653.)

Hill states that the diarrheal diseases of infancy may be divided into three groups: (1) mechanical diarrhea, due to mechanical irritation: (2) fermentative diarrhea, due to chemical irritation; (3) infectious diarrhea, due to bacterial irritation.

The first type of diarrhea is fairly common, and is more likely to be seen in children above the age of 1 year than in those younger. It is caused by mechanical irritation of the delicate intestinal mucosa from such things as grape skins, cucumbers and raw fruit. The treatment of this type consists simply in purging the child with castor oil or calomel, putting him to bed, giving him barley water or some other gruel for 12 hours, with plenty of water, and then starting him on a bland, nonirritating diet of cereal and boiled skim milk.

The second type is more complicated and is the common diarrhea of babies. It is most likely to occur in children under 1 year, but may be seen at any age. It is brought about by abnormal decomposition of food in the intestine, caused either by the bacteria already there or bacteria introduced from without. The products of fermentation irritate the intestinal mucosa and cause a diarrhea, but the mucous membrane is not attacked by bacteria. The abnormal decomposition is usually that of sugar. This is due to (1) overfeeding with sugar; (2) parenteral infections; (3) overheating; (4) nervous exhaustion and excitement; (5) constitutional weakness. The treatment in this type is the initial purgative, if there is harmful material in the intestine, and then barley water for 12 hours. Following this a food should be given high in protein and low in carbohydrates. Albumin milk, skim milk with powdered casein, lactic acid milk or skim milk dilutions are most suitable.

The third type is a true infection of the intestinal mucosa, due to some specific organism, usually the dysentery bacillus, but occasionally the gas bacillus or streptococcus. Combined with infection of the mucosa, there may be also a certain amount of decomposition of the intestinal contents. This type is called infectious diarrhea and arises usually by direct infection of the mucosa by dysentery bacilli taken in per os. The general treatment in this type is the same as that for fermentative diarrhea, but the principles of feeding, however, are quite different. Hill divides these cases into two groups as regards diet. The first group includes cases caused by the dysentery bacillus or, more rarely, by the streptococcus. The second group of cases is caused by the gas bacillus. The feeding in dysentery cases is based on the fact that when offered protein food the dysentery bacillus grows very readily and produces large amounts of toxin. It does not thrive so well on carbohydrate food. Therefore a baby should be fed on a low protein and a high carbohydrate food. The gas cases, however, do much better on lactic acid milk with a low sugar content than with any other feeding. C. A. LANG.

LINDEMAN, EDWARD: BLOOD TRANSFUSION WITHOUT A CHILL BY THE SYRINGE-CANULA SYSTEM. TWO HUNDRED AND FOURTEEN CONSECUTIVE CASES. (The Journal of the A. M. A., June 7, 1919, p. 1661.)

The author reports 214 consecutive cases of blood transfusion by the direct method, without a chill. He gives a complete description of the apparatus used, and the technique of the operation. The advantages claimed for this method are, that the blood passes through a minimum amount of foreign material; that there is no blind system into which air may leak, and that there are no rubber tubings, stop-cocks or valves around which blood may clot. No anticoagulants or no foreign material are introduced into the patient. In his method originally outlined, a little of the salt solution was injected into the vein of the patient from time to time during the operation. This he has found unnecessary and during the past 2 years it has not been used. The chills, according to Lindeman, are the result of slight grades of hemolysis due to poor choice of a donor. The posttransfusion temperature usually occurs from 2 to 4 hours after transfusion and begins to decline 4 to 8 hours afterward. There may, in some cases, be a rise of temperature of 5 or 6 degrees. During this period the patient sometimes has a feeling of malaise and lack of appetite; at other times, exhilaration, restlessness and sleeplessness. When the temperature reaches normal, the full benefit of the transfusion is felt as a rule, and any symptoms incident to the procedure disappear. The citrate of soda in the citrate method he states produces changes in the blood, or allows by its use changes in the blood to develop, which produce chills and severe reactions, and also may cause sensitization to subsequent transfusions. For these reasons he claims the direct method much superior to that by the citrate method. C. A. LANG.

LOWENBURG, HARRY: HEMORRHAGE OF THE NEW BORN. BLOOD TRANSFUSION VIA THE LONGITUDINAL SINUS. RECOVERY. (The Journal of the A. M. A., May 31, 1919, p. 1615.)

Lowenberg reports the case of a female infant, 2 days old, with profuse bleeding from mouth, nose and rectum. The family and obstetric history were negative. The patient was in a practically moribund state and appeared exsanguinated; pulse was accelerated and weak. Temperature 102° F. About 80 c.c. of whole human blood were transferred from the donor to the infant directly into the sinus. During the operation the patient ceased breathing and was thought to be dead. Feeble heart sounds were, however, still audible. Eighty c.c. more of blood were injected directly under the skin of the abdomen. Artificial respiration was inaugurated, and after several gasps the respiratory function was established, but it was performed feebly. However, the color of the baby appeared better and bleeding ceased almost immediately. The baby made an uninterrupted recovery except for a somewhat irregular temperature of a short time. C. A. LANG.

KRAUSE, ALLEN K., AND WILLIS, H. S.: FURTHER EXPERIMENTS ON THE INFLUENCE OF PROTEIN INTOXICATION ON TUBERCULOUS INFECTION IN GUINEA PIGS. (The American Review of Tuberculosis, May, 1919, p. 153.)

The authors by experimental studies attempt to determine the influence of protein hypersensitiveness and intoxication on tuberculous infection in animals, seeking to ascertain whether the above mentioned state lowers the animal's normal resistance to bacterial infection, or, if bacterial infection is already present, the effect on the animal's reactions to it. They maintain that clinically the symptoms of protein hypersensitiveness are prominent charcteristics of the exanthematous fevers. Under the latter are included measles, scarlet fever, chicken-pox, and small-pox. These are all diseases of unknown etiology and mode of action on the human body. All of them give a very low mortality from the infection itself, death being due to bacterial complications mostly coccal, as pneumonia and septicemia, which follow closely upon the original disease. These microorganisms were probably already resident in the body, and would have continued harmless had the original disease not occurred. The exanthematous fevers are alike in their high contagiousness, with almost complete immunity against reinfection, a greater immunity than is conferred by any disease whose germ is known, and in the fact that they exhibit practically no characteristic pathological lesions. The same is true of influenza which has all the features of the above, except the exanthemata.

The writers believe that there are diseases which act dangerously upon the human body, not so much by their direct effects upon tissue, but by effects that establish new interrelations between tissues and other microorganisms, which under normal conditions as those of health are relatively harmless. A person with tuberculous infection, and known to react positively to the cutaneous application of tuberculin almost invariably experiences during measles a diminution in reacting capacity that not infrequently may reach the point of complete inhibition. All such information points to the fact that an acute infection, or the fever that is a consequence thereof, brings about more fundamental changes as regards resistance to infection than the mere mechanical alteration of possible portals of entry of secondary invaders. From certain experiments on guinea pigs, to determine how far protein hypersensitiveness and intoxication influenced tuberculous infection, it was found that continued and daily injection of egg-white protein in an animal before experimental injection with tubercle bacilli rendered the animal less resistant to tuberculous infection, but had no influence on the course of the infection when it was once established. J. HOYT KERLEY.

ABBOT, WILSON R.: THE TREATMENT OF TUBERCULOUS CERVICAL ADENITIS. (The American Review of Tuberculosis, May, 1919, p. 175.)

In the author's opinion, operative interference in tuberculous cervical adenitis comes in the field of major surgery, and should be resorted to only for most definite and imperative indications. The medical treatment is to be thoroughly tried out first by locating and correcting any pathological lesions in the aural, oral or nasal cavities, which are the portals of entry for microbic organisms into the cervical glands. The teeth should be put in good condition, hypertrophied tonsils and adenoids removed and proper attention given to fresh air, out-door sleeping, suitable clothing, abundance of properly balanced food and a general tonic treatment to build up the resistance. Most important of all is the administration of tuberculin hypodermatically, beginning with 1-10,000 mg. and gradually increasing to tolerance at intervals of 5 days. Tuberculin seems to increase the formation of fibrous tissue not only of the capsule, but of the glandular trabeculae also, and is associated with deposits of mineral salts, thus arresting progress toward suppuration and causing eventual contraction of the fibrous tissue and gradual recession in glandular volume. If surgical treatment is attempted, it should be limited to the glands that lie in a triangle, the base of which is formed by a line continuous posteriorly and 2 fingers breadth below the angle of the mandible, and then only before they have broken down. If the glands have broken down, ruptured their capsules and become matted together, the deeper lymphatics will have become involved and the boundaries of the triangle passed. Surgical interference then offers a bad prognosis.

The treatment of the soft, fluctuating, pus-filled, broken down glands is to aspirate using a suction pump attached to a soft rubber catheter, dry the walls, then pack with powder blown in by means of a glass tube. The formula for the powder is: powdered cinnamon, 1 part; powdered benzoin, 3 parts; cornstarch, 10 parts.

J. HOYT KERLEY.

O'CARROLL, JOSEPH, AND NESBITT, GEORGE: SOME RECENT CASES OF ENCEPHALITIS LETHARGICA. (The Dublin Journal of Medical Science, May, 1919, p. 206.)

In a study of 4 cases that came under the care of the writers, they established certain diagnostic features as more or less typical of the disease. There is usually a prodromal period characterized by an initial catarrhal affection, particularly conjunctivitis. Associated with this, a change is noted in the patient's mental attitude, taking the form of apathy or extreme restlessness, followed by progressive lethargy, drowsiness, headache, asthenia, diplopia and diminished visual activity. Following this comes the stage of acute illness, with the characteristic attitude, and a mask-like face, due to facial nerve involvment, and a profound stupor, from which the patient can usually be aroused, alternating in the early stages, with delirium. The speech becomes thick and drawling, and there is retention of urine, tremors, early vomiting and obstinate constipation. Examination of the urine and spinal fluid gives negative physical findings. The course of the disease from now on is either one of gradual improvement, with slow disappearance of the cranial nerve symptoms and eventually complete recovery, or the patient sinks into a state of profound stupor from which he cannot be aroused, and dies without regaining consciousness. Two of the above mentioned cases died. The mortality as given in the English local Government Report is about 20 per cent.

J. HOYT KERLEY.

LANDSMAN, ARTHUR A.: CONDITIONS WHICH AFFECT THE OCCURRENCE OF RECTAL DISEASE IN INFANCY AND CHILDHOOD. (Medical Record, June 28, 1919, p. 1089.)

The anatomy of the infant's sacrum is different from that of the adult in that it is shallower and has not so much of a curve. Therefore the rectum which follows it closely is straighter and less support is afforded the sphincter ani. This condition undoubtedly favors the occurrence of prolapsus ani which is so much more frequent in infants than in adults. Another group of rectal conditions seen in children is that due to congenital abnormalities. Among these are the bisecting band, partial stricture and complete atresia ani. There is also that group of fistulae due to imperfect embryological development. The average occurrence of such ano-rectal defects is one in about 5000 births. Two other groups of conditions mentioned are the hereditary, i. e., syphilitic, and environmental. The latter includes diseases due to parasites, pin, thread, and tape worm.

Hemorrhoids are rarely seen in children younger than two years. The type of the infant's food and the habit of responding instantaneously without a moment's inhibition, to the stimulus to defecate are probably the reason for freedom from this adult condition.

HUGH CHAPLIN.

DRACHLER, R.: THE DIAGNOSIS OF APPENDICITIS IN CHILDREN. (The Medical Review, May, 1919, p. 131.)

Making a plea for more careful and early diagnosis of appendicitis in children, the writer notes the following important points in making the diagnosis. The child is almost invariably restless at night, constipation is much more frequent than diarrhea. When the latter condition is present, the abdominal tenderness is not usually confined to the right lower quadrant. In spite of dispute by some, the author thinks that very few cases are free from temperature at some time. A child with appendicitis will not voluntarily sit up in bed, and objects to being lifted. The face generally is pale, not red, even with fever. Abdominal palpation is painful; rigidity indicates immediate operation. Many cases are overlooked entirely, and, on the other hand, many other conditions are first diagnosed appendicitis, thus showing the great need for better diagnosis of this acute and serious condition.

HUGH CHAPLIN.

HARRISON, VIRGINIUS W.: UNIOVULA TWIN WITH CONGENITAL ABSENCE OF THE RIGHT FEMUR. (Virginia Medical Monthly, June, 1919, p. 54.)

The author reports a rare case of twins from the same amniotic sac, i. e., developed from one egg. They were smaller than usual, weighing 3 pounds and 13 ounces and 3 pounds and 6 ounces, respectively. Both were females. One of the twins had a very short right thigh. X-ray examination showed the entire absence of the right femur. Both children were improving when lost track of at one month of age.

HUGH CHAPLIN.

HODSON, WILLIAM: SOME PHASES OF THE NEW CHILDREN'S CODE OF INTEREST TO PHYSICIANS. (Minnesota Medicine, July, 1919, p. 213.)

Hodson, who is Director of the Children's Bureau of the State Board of Control of Minnesota, tells how Governor Burnquist of that State appointed a Child Welfare Commission in 1916 to study the social needs of children—especially the dependent, neglected, delinquent and defective children. Of the 41 bills reported to the legislature 35 were passed at one session. This is said to be the greatest single body of progressive laws relating to children to be found anywhere in this country. The three fundamental principles guiding the committee's work were: 1. That a child is entitled to be born into the world sound in mind and body. 2. That he is entitled to the fullest opportunity for growth and development consistent with his capacity and circumstances of life. 3. That he should have protection against his own anti-social tendencies and correctional restraint when necessary.

The State's responsibility on the social side for uncared for children of all classes has been centered in the State Board of Control and in the various county child welfare boards. The State Board of Control does not conflict at all with the State Board of Health, for the former cares for the social needs of the children only. Briefly summarized, the phases of the now existing laws which are of particular interest to physicians are: 1. Mentally defective children may now be committed, through the probate court, to the care and custody of the State Board of Control—this commitment may be by compulsion where necessary. All such commitments will receive attention by the Board, either by institutional care for the most urgent cases, with special reference to girls and women of child-bearing age, or by parole supervision in the community until institutional care can be provided. 2. Physically defective children can be brought into the juvenile court when their parents will not, when able, secure for them proper medical attention. 3. All maternity hospitals are licensed by the State Board of Control in addition to whatever regulation is provided by the Board of Health. 4. All births in maternity hospitals must be reported to the Board of Control in addition to the Board of Health, and a statement must be made as to legitimacy. 5. Rights and duties in a child can only be transferred by order or decree of court—usually the juvenile court. 6. Fathers of illegitimate children should be made fully responsible, and mothers must nurse their babies while under the control of the hospital and as long thereafter as is possible and necessary. HUGH CHAPLIN.

MILLARD, C. KILLICKS: BIRTH CONTROL IN RELATION TO CHILD WELFARE. (The Child, June, 1919, p. 392.)

The author who is Medical Officer of Health for Leicester, England, makes a plea for the general principles of birth control.

One of the reasons he mentions why this could not be considered during the war was the need, as felt by many Englishmen, of a large increase in birthrate to meet the German menace. But now that this menace is broken, the subject may be considered on its merits. He briefly recalls the practical phases of the problem, reiterating the already well known facts that there is often a close relationship between a high birth rate and a high infant mortality rate; that rapid increase in the size of families has its connection with overcrowding and poverty which are such potent factors in infant mortality. He also mentions the evil effect on the mothers of the over-maternity frequently unfitting them most of the time for caring for their children.

The ethical side of the problem is dealt with by quoting a statement of the Bishop of Birmingham, President of the National Council of Public Morals and Chairman of the National Birth Rate Commission, which the author considers to be evidence that the previous idea that birth control is necessarily wrong and "immoral," is rapidly dying out. The statement of the Bishop of Birmingham, in part follows: "What a nation needed was not an unlimited number of citizens, but a sufficient number of the best quality. Morally as well as eugenically, it was right for people in certain circumstances to use harmless means to control the birth rate. The most unsatisfactory feature in regard to this matter was that child bearing was prolific, speaking generally, only in the very classes in which the children did not get a fair opportunity of life, while in the section of the population, where there were good prospects of insuring a healthy upbringing, control was carefully exercised. It was contended by the objectors to birth control that the object of marriage being the production of children, preventive measures were necessarily wrong. * * * * The reply to the argument used might be that the procreation of children was not the only object of matrimony and there was surely a dishonoring of that very object to have children born when not wished for by both parents. * * * * It was immoral to avoid having children born from selfish motives, but it was surely also immoral to have child after child under circumstances which, humanly speaking, were such as to render the proper upbringing of such children impossible." HUGH CHAPLIN.

POOLER, H. W.: SOME FACTORS INFLUENCING GROWTH IN INFANCY AND CHILDHOOD. (The Child, June, 1919, p. 396.)

The writer lays special emphasis on environmental conditions, though believing also in the influences of heredity, because his suggestions are aimed chiefly at social workers for infant welfare. He considers the conditions influencing normal development as both ante- and post-natal. He quotes references for the accuracy of the statement that married woman's labor, alcoholism, and semi-starvation of pregnant mothers are potent factors in causing still births and producing immature and delicate children.

Among the post-natal conditions needing attention are the character of stimuli constantly received by the highly sensitive and constantly growing infant. All his muscular activities are the result of reaction to stimuli, either of sight, or sound, or feeling. Also his habits are so formed. The rudimentary habit of feeding and all those of digestion are constantly influenced by the correctness and the regularity of the stimuli governing these processes. It is very evident that the type of development of the child's nervous system and of its mental equipment depends very much upon how many and what is the quality of the stimuli which are brought to bear upon the infant's sensitive nervous mechanism.

But the writer considers more concrete conditions having a marked influence upon the development of the child and partly acting through the mother, partly through the child. Of the former are maternal under-feeding with its direct effect on the child through a poor quality of breast milk. Also to poor mothercraft or poor household management, undoubtedly can be directly traced the cause of poor development in many children.

More directly comes the influence of mental deficiency, inanition, marasmus, and rickets upon infant and childhood development, and these causes must be considered always in order that such steps may be taken early, where possible, to prevent their occurrence. As almost all of the factors mentioned, both ante- and post-natal and whether acting through the mother indirectly or more directly in the child itself, are amenable to the efforts of the Social Worker of Child Welfare Organizations, the writer closes by calling their attention once again to the results they may hope to accomplish if they meet their opportunity successfully.

HUGH CHAPLIN.

INTRASPINOUS INJECTIONS OF MAGNESIUM SULPHATE IN SEVERE CHOREA. (Medical Record Editorial, June 14, 1919, p. 1011.)

The editor mentions Marinesco treatment of 4 extreme cases of chorea by the intraspinous injection of magnesium sulphate. The danger of the method, *i. e.*, respiratory paralysis, more than offset any benefit and led to his abandoning it. In spite of this, Cavalieri (Il Policlinico, April 6, 1919) tested magnesium sulphate in a severe case of chorea and obtained excellent results. Of a 25 per cent aqueous solution, he injected 2 c.c. two or three times daily. The patient was 13 years old, the chorea of a rheumatic type and mitral insufficiency had already developed. The disease progressed despite the usual functional and specific medication (arsenic) and the magnesium treatment was then begun. Immediate improvement was noticed from the second day and the patient thenceforth slept well. On account of his rheumatic fever he remained in bed for 4 weeks. He was then able to feed himself and in 2 more weeks was well save for his heart lesion.

HUGH CHAPLIN.

A BABY ARISTOCRACY. (The Juvenile Court Record, Children's Bureau, Washington, D. C., August, 1919, p. 14.)

In order to belong to the Baby Aristocracy of Brockton, Mass., a baby has to successfully meet the following 5 requirements: 1. The father must have earned a fair wage. 2. The mother must not have been gainfully employed either during the year before or the year after the baby's birth. 3. She must have had at least fair medical attention when the baby was born. 4. Both father and mother must have been able to read and to write. 5. The house the baby lived in must have been well ventilated, clean, sanitary and not overcrowded.

Only 205 of the 1210 babies born alive in Brockton, within the year studied, could meet these requirements. Among these, 15 died before they were one year old i. e. a rate of 73 per 1000 or 24 points more favorable than the rate for Brockton as a whole. Out of the 1005, who were not eligible, 112 died before they were one year old or 14 points less favorable than that for Brockton as a whole.

HUGH CHAPLIN.

HOLT, L. EMMETT, COURTNEY, ANGELIA M. AND FALES, HELEN L.: A STUDY OF THE FAT METABOLISM OF INFANTS AND YOUNG CHILDREN. 1. FAT IN THE STOOLS OF BREAST FED INFANTS. (American Journal of Diseases of Children, April, 1919, p. 241.)

Reliable figures on the composition of stools of breast fed infants are particularly scanty. Both for this reason and because of the great importance attached to all information concerning the results of breast feeding, the authors began a general study of the fat metabolism of infants and young children with the examination of a considerable number of stools of breast fed infants. The observations were made with a view to answering the following questions: (1) What is normally the per cent. of total fat and what is the distribution of fat as soap, free fatty acid and neutral fat in the stools of healthy breast fed infants? (2) What is the difference in fat content and distribution of fat between normal and abnormal stools? (3) Does the amount and distribution of fat in the stools of healthy breast fed infants vary with the per cent. of fat in the milk, and with the amount of fat intake?

The material examined consisted of 48 collections of feces from 34 different infants from 10 days to 10 months of age. Thirty of these children were well nourished and healthy while 4 were actuely ill. Their conclusions were as follows:

1. The fat of the stools of normal breast fed infants, averaged 34.5 per cent. of the dried weight and frequently was as high as 50 per cent.
2. The soap fat in the best stools predominated over the other forms of fat, averaging 57.8 per cent. of the total fat, as determined on the dried stool. The average stool of the normal breast fed infants showed a soap fat of 43.1 per cent. of the total fat, as determined on the dried stool, which would correspond to over one-third of the total fat of the fresh stool.
3. The neutral fat in the best stools averaged 15.9 per cent. of the total fat; in the average stool the natural fat was 20.2 per cent. of the total fat. The amount of neutral fat is not affected by the drying process.
4. No constant relation was shown between the per cent. of fat in the mother's milk and the per cent. of total fat and its distribution in the stool.

5. With a higher total intake of fat, the fat per cent. and the soap fat in the stool were somewhat increased.

6. A range of fat absorption from 90.3 to 99.2 per cent. of the intake was found in healthy breast fed infants.

C. A. LANG.

BATCHELOR, M. D. AND BATCHELOR, R. P.: OBSERVATIONS ON A CASE OF RUMINATION WITH SUGGESTIONS AS TO TREATMENT. (American Journal of Diseases of Children, January, 1919. p. 43.)

The authors give a brief review of the literature since 1890. They report one case and in attempting different methods of treatment came to the conclusion that the mere mechanical closure of the jaw could be used as a therapeutic measure, and attempted to devise some method along this line whereby they would be able to check rumination completely. They were able to do this by fitting a canvas cap to the child's head and tying it tightly under the chin, making it impossible for her to extend her lower jaw. This cap was made of canvas with three pairs of tapes leading from it; these by being tied under the chin were the means of holding up the lower jaw. They found tapes to work better than a comfortable chin pad because of the discomfort they caused when she attempted to pull against them. Because of this discomfort the baby grew less persistent in her efforts to work loose the cap. In using the cap they fed the child rather rapidly, so as to prevent attacks occuring during the feeding, and then quickly put on the cap and tied the tapes tightly under the chin. It was necessary to have the cap securely tied so that it could not be worked off by head movements. The cap was kept on for two hours after each feeding. During this time it was found necessary to tighten the tapes 2 or 3 times. With the tapes tight, it was impossible for attacks to be initiated, so that no rumination occurred. On one or two occasions the child ruminated a few times after the removal of the cap. Within 4 days after beginning this method of treatment the condition was so well checked that the child was treated at home. After several days the cap was removed sooner after each feeding, so that at the end of 2 weeks the cap was no longer needed. Two months after rumination had ceased, her weight was 15 pounds, 9 ounces, a gain of nearly 4 pounds in 9 weeks. The authors recommend this method as a convenient therapeutic measure when solid food therapy is not advisable.

C. A. LANG.

Schloss, Oscar M., and Harrington, Helen: Comparison of the Carbon Dioxid Tension of the Alveolar Air and the Hydrogen-Ion Concentration of the Urine with the Bicarbonate of the Blood Plasma. (American Journal of Diseases of Children, February, 1919, p. 85.)

From data obtained during the past 2 years, Schloss and Harrington found the plasma bicarbonate of normal infants ranged from 49 to 72 volumes per cent. of carbon dioxid bound as bicarbonate at 0° and 760 m.m. barometric pressure. The carbon dioxid tension of alveolar air varied from 34 to 45 m.m. of mercury. The accuracy of the collection of a sample of alveolar air from infants they found dependent to some degree on the manner in which the infant breathed. In very small infants, whose tidal air volume was small, or sick infants, with shallow respiration, the analysis of alveolar air may be very misleading. From their data it is quite evident that a consideration of carbon dioxid tension of alveolar air alone would have led to the diagnosis of acidosis, while the plasma bicarbonate showed that none existed. The reason for this is that the tidal air volume is so small that but little air enters the bag, most being taken up by the dead space in the mask. The air withdrawn from the bag for analysis contains a large proportion of atmospheric air. They found that the carbon dioxid tension of alveolar air and the plasma bicarbonate correspond closely only in infants whose tidal air is of moderate volume. In infants with shallow respirations, the alveolar air may lead to the diagnosis of acidosis when none exists. In such cases the plasma bicarbonate must be used as a guide or a mask devised which has a smaller dead space. In cases of acidosis they found a close correspondence between the alveolar air and the plasma bicarbonate. This, however, is true only before the administration of sodium bicarbonate. In many infants, who had been given a sufficient amount of sodium bicarbonate to restore the alkaline reserve, the alveolar air analysis showed results which were too low despite the correction of acidosis. This might possibly be due to a hyperirritability of the respiratory centre after the correction of acidosis.

The average hydrogen-ion concentration of the urine from all cases was found to be 5.24. The hydrogen-ion concentration of the urine closely corresponded to the lower carbon dioxid tension of alveolar air and the lower plasma bicarbonate. Food seemed to have an influence on the hydrogen-ion concentration of the urine. The urine was more acid in infants receiving food richer in protein. In children suffering from acidosis the hydrogen-ion concentration of the urine is uniformly high. With the correction of the acidosis, the hydrogen-ion concentration is lowered. Their data demonstrate the disadvantage of gauging the administration of sodium bicarbonate by the reaction of the urine. The use of such an indicator as litmus, which turns blue at a hydrogen-ion concentration of about 7, would necessitate raising the plasma bicarbonate much above normal. Cresol purple they found much more satisfactory as it changes color at about 5.3, and obviates increasing the plasma bicarbonate much above normal. Even this indicator, however, was not entirely satisfactory, for the urine may be too acid to change cresol purple despite the presence of a normal alkaline reserve. Cresol purple is of definite negative value in excluding the presence or persistence of acidosis. If the urine causes the development of a magenta or purple color, acidosis can definitely be excluded. In several of their cases the administration of large amounts of sodium bicarbonate was followed by tetany, or edema or both, but whether these conditions were a direct result of increasing the plasma bicarbonate above normal it was difficult to determine. They did not find convincing evidence that an excess of plasma bicarbonate was necessarily harmful, but consider it more ideal to avoid raising the alkaline reserve much above normal. This can be done best by using the plasma bicarbonate as a therapeutic guide. If the determination of the plasma bicarbonate is not possible the use of cresol purple is desirable. Even if with its use the alkaline reserve is raised somewhat above normal, this condition is of less danger than that of acidosis.

C. A. Lang.

BOOK REVIEWS

MILK. BY PAUL G. HEINEMAN, PH.D. Director of the Laboratories of the United States Standard Serum Company, Woodworth, Kenosha County, Wisconsin. Illustrated. Philadelphia and London. W. B. Saunders Company, 1919.

Here we have a book that every pediatrist,, and indeed every general practitioner doing children's work should have on his table. It is a copiously illustrated book of almost 700 pages, is printed in large, easily readible type, and is well bound. In spite of the author's claim that the subject has not been extensively treated, the reviewer feels that he has been too modest. Although it is not encyclopedic in character yet it is comprehensive. For those who wish to follow up various avenues in the subject, a bibliography is appended to each chapter and thus further study is aided. A glance at the contents of the book reveals the following chapters: Historical; The Physiology of Lactation; The Physical Properties of Milk; General Chemistry of Milk; The Physical and Chemical Examination of Milk; Adulterations of Milk; Enzymes in Milk; The Transmission of Toxins and Antibodies Through Milk; The Germicidal Action of Fresh Cow's Milk; Micro-organisms in Milk; The Kinds of Micro-organisms in Milk; Fermented Milks; The Bacteriologic Examination of Milk; Milk-borne Infections; Certified Milk; Pasteurization of Milk and other methods of reducing the Germ Content; The Control of Milk Supplies; The Economic Aspect of Milk Production; Milk in Its Relation to Infant Feeding; Butter; Cheese; Ice Cream and Ices; Condensed and Dessicated Milks; Milk from Mammals other than the Cow; Index of Names, and Index of Subjects. Of special interest are the chapters on General Chemistry of Milk; The Physical and Chemical Examination of Milk; and Milk in Its Relation to Infant Feeding.

THE JOHNS HOPKINS HOSPITAL REPORTS. VOLUME XVIII. Baltimore. The Johns Hopkins Press, 1919.

This year's report, the 18th in number, from the Johns Hopkins Hospital is just as worth while as its predecessors and that leaves little to be said. It is a large book of over 450 pages, and as usual the illustrations, especially the microphotographs, are exceptional. Of special interest to pediatrists are the following topics: Studies on Paratyphoid Tetany; Effect of Feeding Glands of Internal Secretion to Chicks; Congenital Obliteration of the Bile Ducts; Congenital Atresia of the Esophagus; and Ectopia Cordis in a 15 Months Old Infant.

APPENDICITIS IN CHILDREN. (Correspondenz-Blatt für Schweizer Aertze, Basel, March 29, 1919.) Suter remarks that blunders in the diagnosis of appendicitis are more common in children than in adults. In 5 cases described, the symptoms deceptively simulated appendicitis and the child was to be operated on in the morning, but morning showed unmistakable diphtheria or mumps or the operation revealed ileus from a kink or a gravity abscess from spondylitis. In other cases acute catarrhal enteritis or fermentation dyspepsia was responsible for the symptoms. One boy of 12 returned 15 months after an operation for coxitis, the symptoms indicating returning of the hip-joint disease until discovery of a tender resistance above the right Poupart ligament and the operation revealed a gangrenous appendix. Suter operates at once, day or night, if no more than 48 hours have elapsed since the first symptoms. If later than this, he waits, unless his hand is forced, 3 or 4 months until the tenderness and resistance have disappeared.—*Journal A. M. A.*

SERODIAGNOSIS OF INHERITED SYPHILIS (Archives de Médecine des Enfants, Paris, April, 1919). Barbier has been making a special study of atrophy in nurslings during the last 15 years, and reports positive Bordet-Wassermann reaction in 33 per cent of 93 infants with atrophy. A number of others were certainly syphilitic, so that the proportion was at least 42 per cent. In 11 per cent there was an unmistakable tuberculous taint. Atrophy from improper or inadequate feeding can be effectually combated by regulating the diet, but these inherited taints call for specific treatment besides. Some of the infants begin to thrive when mercury is given; others are unable to bear it. In any event, he warns that it should be given very cautiously, in minimal doses.—*Journal A. M. A.*

ARCHIVES OF PEDIATRICS

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FLOYD M. CRANDALL

Dr. Floyd M. Crandall, who died November 19th, 1919, was editor of Archives of Pediatrics from 1895 to 1899. When he resigned as editor he remained a collaborator and friendly adviser. Born in Belfast, N. Y., on May 2nd, 1858, the son of a physician, he showed his interest in medicine early in life. After serving as principal of the Genesee Valley Seminary, he entered the medical department of the University of the City of New York, from which he was graduated in 1884, and, because of his high rating in the examination for his degree, was appointed to the house staff of Bellevue Hospital. Upon leaving the hospital he engaged in private practice, specializing in diseases of children, and was made physician to the Out-Patient Department of Bellevue Hospital and to other institutions. Later, when his ability was recognized, he became visiting physician to hospitals for infants and children—the Minturn Hospital of the Department of Health, the Infants' Hospital and the Children's Hospital.

He was consulting physician to these and to other institutions after he relinquished private practice. He taught pediatrics and was in regular course instructor, lecturer and adjunct professor of diseases of children at the New York Polyclinic. He was a constant contributor to pediatric literateur. All of his articles were marked by clearness and well balanced judgment.

In addition to the responsibilities of practice, teaching and writing, Dr. Crandall found time to serve on the New York State Board of Medical Examiners, on the Hospital Commission appointed by the Mayor of New York, as Chairman of the Pediatric Section of the New York Academy of Medicine and also as Chairman of its Committee on Admissions. He was one of the secretaries of the Pan-American Medical Congress of 1893, President of the Medical Society of the County of New York in 1906, President of the Society of the Alumni of Bellevue Hospital and President of the West End Medical Society. He became a member of the American Pediatric Society in 1891 and held office as recorder and a member of its council. He was a frequent participant in the proceedings of this society, of which, at the time of his death, he was an emeritus member.

Although he was busy in his chosen field of pediatrics, in private practice and in the wards of the hospital, Dr. Crandall was associated with the activities of the medical societies of New York and of the American Medical Association, and as an officer of these societies he labored constantly for their interests and those of the profession at large. In 1916, Dr. Crandall became secretary of the Medical Society of the State of New York and his duties kept him from hospital visiting and private practice, but he continued to be a consulting physician. He traveled, wrote and gave his best energies to advance the standing of the medical profession. Many of his editorials relating to legal and medical topics appeared in the New York State Journal of Medicine, of which he was assistant editor. He was methodical and painstaking in all that he did and had a true understanding of the worth of men with whom he was associated both in his private and official positions, but he could not accept the specious views of those less honest than himself who worked for selfish ends. As physician, author, teacher and citizen, Dr. Crandall's name is synonymous with honest purpose, so essential in upholding the honor and dignity of the medical profession and in advancing the cause of upright citizenship. WALTER LESTER CARR.

FLOYD M. CRANDALL

THE ATROPIN TREATMENT OF PYLOROSPASM AND PYLORIC STENOSIS.*

By Sidney V. Haas, M.D.,

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There are several diseases of obscure etiology peculiar to infancy, the chief symptoms of which are referable to the gastro-enteric tract. These are hypertrophic stenosis of the pylorus and spasm of the pylorus. The clinical picture of both is so well known as to warrant only the shortest description.

An infant born apparently normal, progressing more or less favorably in its feeding and nutrition, begins after from 2 to 4 weeks to vomit with force, usually immediately after feeding, occasionally retaining one or two nursings, and then vomiting all or what seems to be all of these. There is usually visible peristalsis of the stomach, sometimes of the intestines, more or less constipation, with rapid loss of weight, and when hypertrophic stenosis exists a mass may be felt in the pyloric region, usually described as spool or olive shaped, which ordinarily is found above and to the right of the umbilicus.

A careful consideration of the possible etiological factors of these so closely allied conditions would seem to point to a disturbance of physiological function of the vegetative nervous system, and clinical experience would seem to justify the hypothesis that disturbance in function of the vegetative nervous system is the chief, if not the only, factor in their etiology. Under this hypothesis, hypertrophic pyloric stenosis is considered as simply an advanced degree of pylorospasm. This does not gainsay the existence of pyloric stenosis of organic origin, but does refer to the many cases of hypertrophic stenosis so liberally reported in the literature as requiring operation for their relief.

In what follows there is no desire to minimize the brilliant results of operation in the hands of many able surgeons or to suggest that operation may never be required, but that surgical procedure should be a rarity for this condition, and not practiced until atropin has been given a trial.

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*Read at the annual meeting of the Medical Society of the State of New York, at Syracuse, May 6, 1919.

Pylorospasm and pyloric stenosis are simply the dominant features of a general state of hypertonicity, which has been described elsewhere under the caption of the "hypertonic infant"[1] and from which the following description is taken:

"The hypertonic infant is a definite clinical entity. It is characterized by hypertonicity of all the skeletal muscles, as shown by the ability to raise the head and grasp objects even in the early days of life, and by general spasticity. The hollow viscera show increased activity of their smooth muscle fibers. This expresses itself in the form of spasm involving practically every part of the digestive tube, and, depending on the region, presents the symptom of colic, visible peristalsis, vomiting, constipation, or any combination of these. Accompanying these symptoms is marked psychic irritability, expressed by insomnia, general restlessness and crying. The hypertonic infant belongs to the spasmophilic group and presents the symptoms of vagotonia.[2]

"Its recognition is of importance in this, that while presenting symptoms in the main of disturbances of nutrition, food regulation alone does not correct the fault, whereas treatment by the drug atropin is followed by rapid subsidence of symptoms, the results being so prompt and regular as to constitute specific action. The tolerance for milk, which is usually low in these infants, is at once materially increased, so that a normal amount may be utilized—a condition quite opposed to that existing before the atropin was begun."

The varied picture, the numerous symptoms, the irregularity of their onset, course, and termination, definitely place this syndrome in the realm of perverted physiology. It is difficult to conceive that anything short of a system could be at fault; for, although there is a disturbance of metabolism, no particular gland dysfunction is capable of explaining this phase. No ductless gland or combination of ductless glands can be reasonably thought of as a cause. On the other hand, in favor of the vegetative nervous system as the prime etiologic factor, we have the disturbance of temperature, usually below normal, cyanotic and cold extremities, or extreme pallor of the face, overaction of the involuntary muscles, the disturbed metabolism due to the imperfect glandular action under the control of the vegetative nervous system.

The involuntary nervous system is composed of two parts. Fibers from each are believed to supply all the organs of the body. They represent a regulating mechanism and in a state of health are in balance. The autonomic or activating portion is carried from the third, seventh, ninth, tenth and eleventh cranial nerves and in the viscera-pelvic nerve. It is also referred to as the vagus group or system. The sympathetic or inhibiting fibers are to be found in that portion of the vegetative nervous system not included in the above. An excellent short review of the vegetative nervous system from a clinical aspect is that of Julian M. Wolfsohn.[3]

The question of differentiating pylorospasm from pyloric stenosis has been much discussed. At the present moment the weight of authority would seem to indicate that pylorospasm and pyloric stenosis are two definite clinical entities. But this is by no means a general opinion. Holt[4] believes that hypertrophy is always present before the spasm, and in this way accounts for the interval of weeks from the time of birth until the onset of symptoms, the symptoms not occurring until the element of spasm has been added. In furtherance of the argument, attention is called to the existence of the large, cartilaginous, hard mass which it is difficult to conceive of as originating from simple overactivity of the parts and to the persistence of this mass long after a cure has been obtained by operation or otherwise. A personal experience leads to the contrary view, that pylorospasm and pyloric stenosis are not two definite entities, but simply phases of one, although it is fully recognized that rarely true organic tumors of the pylorus are found in infants. In support of this viewpoint may be mentioned that all cases of pylorospasm coming under observation during the last 4 years have responded to treatment with atropin, although among the cases are not less than 4 for whom operation was advised as the only means of relief. The results were so definite that it seemed justifiable to predict that pyloric stenosis would undoubtedly respond in a similar manner, and when the first case of absolute stenosis did come under my observation the cure was just as prompt as had been those of pylorospasm. In further support of this viewpoint may be mentioned the case of Ransohoff and Woolley[5] in which with an onset at 3 weeks and a Rammstedt operation at 10 weeks, in which a tumor was found 2 cm. long by 1 cm. thick, of cartilaginous hardness, the infant made an excellent recovery, but died at the age of 7½ months from a large thymus; at the autopsy the pyloric orifice was found to be normaly dilated, and there was an entire absence of pyloric tumor mass. Dr. B. K. Rachford[6] states "that if the pyloric sphincter is so cut as to leave the pyloric orifice patulous and prevent muscular spasm of these fibers, the pyloric tumor disappears entirely, and this occurred within a few months." And again, Dr. Alfred A. Strauss[7] states "that his experimental work demonstrated to his complete satisfaction that it is impossible to form a pyloric tumor unless some experiment can be devised whereby the independent rhythmic snakelike contraction of the pylorus can be reproduced. Dissection of 65 tumors at operation showed that the tumor was absolutely proportionate in size to the age of the infant, which demonstrates that the tumor must be a progressive developmental affair." The histology of these tumor masses showing only an hypertrophy and no fault in arrangement of the normal elements speaks loudly in favor of a functional creation.

Rogers[8] states that in fatigue the inhibitory impulses of the sympathetic system fail and the vagus, then capable of overaction, results in hypersecretion, hyperacidity and hypermotility or pylorospasm. If spasm can be localized with reasonable certainty in the pylorus even when no ulcer exists, a wide division of the circular muscular fibers at this point as can be done by a Finney operation is a logical mechanical treatment, and is applicable under the proper conditions, even when no ulcer is found. When ulcer is not present experience has proved that the results of the usual gastrojejunostomy are disappointing.

Among the arguments used against the medical treatment of these cases is the sudden death which not infrequently occurs. Sudden death does occur in these cases, and almost invariably presents the picture of thymus death, but this occurs in infants who have been operated upon as well as those who are medically treated.

Upon the hypothesis that the vegetative nervous system is at fault, the use of atropin presents itself at once as one of the rational therapeutic agents, since it paralyzes the vagus endings.

That it is the only one is not to be supposed. The use of atropin in this field is not unknown, but there has always been a misapprehension of the dose of atropin which an infant can tolerate in this condition. Atropin has been used with success in convulsions in children,[9] in pylorospasm,[10] in the exudative diathesis,[11] and other states, but certain important considerations have interfered with a proper appreciation of its value. A notable fault is the inconstancy of the therapeutic value of atropin, which is not less than that observed in various preparations of digitalis. Another is the rapid loss of pharmacologic power.[12]

The clinical experimentation with atropin has shown remarkable consistent results. The following factors are absolutely essential in attaining success: 1st, an active preparation of atropin; 2nd, a renewal of this preparation before too great deterioration; 3rd, sufficient dosage.

The treatment of the condition under discussion is pursued in the following manner: A solution of atropin, 1/1000 is prepared, and the first dose is one drop, or 1/1000th of a grain, to be put into feeding, if bottle fed, or to be given in a teaspoonful of water preceding a feeding, if breast fed. If there is no idiosyncrasy to the drug, the dose at the next feeding is two drops, and this dose had better be continued during the next 12 hours unless there is an entire absence of improvement when a larger dose may immediately be used. Thus at the end of 24 hours one may be using three or four drops with each feeding. If after 12 hours more this has not proven effectual and there is no flushing of the face or other symptoms of physiologic saturation, then the dose is to be increased by one drop at each feeding until the symptoms are satisfactorily controlled. I have used, as I shall show you in the chart later, six drops at each feeding (42 drops in seven feedings), or 1/24th of a grain in 24 hours, in an infant two weeks old. Atropin must be continued for a variable time, in some cases only a few weeks, in other cases for many months, and only the lowering of the quantity or entire omission from time to time will demonstrate that it is no longer necessary.

The toxic or physiologic reaction from the use of atropin in infants are in the order of their frequency:

Flushing or reddening of the face and body, which may vary from a faint pinkness to a scarlet fever appearance, giving the impression that the child has fever.

Midriasis—the pupils dilated—no reaction to light.

Temperature taken at this time frequently shows a rise from ½ to 2 degrees Fahrenheit.

Dryness of lips and mouth and inability to secrete tears.

Irritability and quick jumpy movements are not uncommon.

Pallor and drowsiness sometimes occur.

None of these symptoms is in the least dangerous and disappear promptly upon discontinuing the drug for a few doses. At this present time in my ward at Lebanon Hospital is a child of two years sent in for atropin poisoning. A dose of one dram of a 1/5000 solution was given three times in 6 hours (about 1/25th of a grain) by a physician who had heard that atropin was of value in vomiting. It promptly controlled the vomiting, but sent the doctor into panic and the child into the hospital, where masterly inactivity relieved it of its flushing and dryness after a short time.

Hypertonic infants tolerate unusually large doses of atropin safely.

Infants who cannot tolerate at least 1/2000th of a grain six to seven times daily will probably not be benefited by the treatment.

A common dose of atropin for an infant of the hypertonic type, from a few weeks to a few months of age, is 1/50th to 1/25th of a grain in 24 hours, with an extreme of 1/16th of a grain in 24 hours.

Examples of three types of the hypertonic infant will be given: 1st, the hypertonic infant without pylorospasm; 2nd, the hypertonic infant with pylorospasm; 3rd, the hypertonic infant with hypertropic pyloric stenosis.

1st. Roger F., born July 14, 1915, kindly referred by Dr. Simonson; birth weight, 6.10 pounds. Present complaint, vomiting, crying, insomnia and constipation; no gain recently. This case had been seen by no less than four prominent pediatrists, and at the end of 5 months it was losing steadily and presented the above symptoms. Of the many changes in diet it was possible to collect data of the following eleven: (1) breast; (2) breast, barley water (3 months); (3) breast, top milk 9½, dextrinized barley water 10½ (fourth month); (4) top milk, 8 ounces; barley water; (5) top milk, 24 ounces; (6) skim milk; (7) milk, sugar, water; (8) condensed milk, 1:10; (9) top milk mixture peptonized; (10) malt soup; (11) protein milk.

The child presented the picture of marked rickets, screamed constantly, was said never to sleep, and vomited continually, not projectile—no visible peristalsis. As the chart shows, at the first visit on December 23, 1915, the child was 5½ months old; the weight was 11 pounds. He was placed on a formula of full milk 20 ounces, granum ½ ounce, maltine, ½ ounce, and water 16 ounces, 6 ounces every four hours, with two drops of atropin at each feeding. On December 28 he was sleeping well, was comfortable, with some spitting; still constipated; marked gain in weight. On January 28 the symptoms were entirely relieved; weight was 12.9 pounds. On March 28, 1916, at the age of 8½ months, the baby weighed 15.8 pounds. There were no symptoms of any kind. Atropin had been stopped 10 days previously.

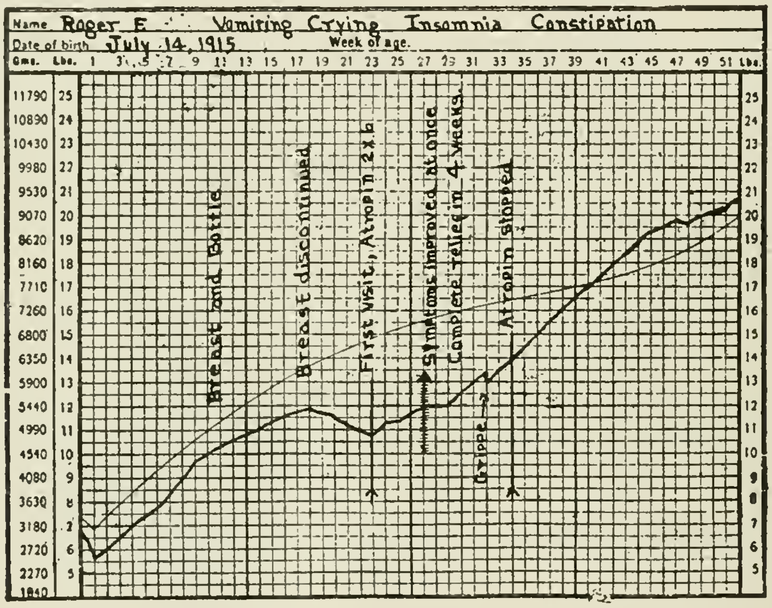

FIG. 1.—Weight chart of case 1—hypertonic infant.

2nd. Case of pylorospasm, baby John S., kindly referred to me by Dr. I. L. Hill; born September 1, 1918. It was the first baby, forceps being required for delivery. The birth weight was 7.11 pounds. The baby was first seen on October 13 at the age of 6 weeks. By October 3, the weight had risen to 8.1 pounds on breast feeding. At this time it began to spit and soon was vomiting. The vomiting was projectile in character; the bowels had become constipated, and the baby cried constantly. The weight at the first visit was 7.1 pounds. Treatment up to this time consisted of feeding the baby part breast and part evaporated milk, properly diluted, feedings preceded by small doses of paregoric, the child being maintained in a semi-upright position. These procedures had all been of no avail, the condition appearing to be growing worse daily, and the gastric peristalsis was the most marked I have ever seen. No change was made in the diet or regimen, but atropin, one drop of 1/1000 solution, was administered before each feeding. The first dose was given at 3 P. M. It vomited the 6 P. M. feeding, and retained everything after that. On October 15, it weighed 7.4 pounds. There was no vomiting, no crying, was able to take 3 ounces of food for the first time, and the bowels had moved regularly during the last two days. The symptoms were all tremendously improved with the exception that no further gain was made. But when four drops were used the gain was rapid. The character of the feeding was not changed until November 1, at which time the baby weighed 8.2 pounds. There was still occasional projectile vomiting, perhaps once in several days. The peristalsis was still marked, but the child no longer cried and was apparently perfectly normal. At this period when the infant was asleep the fingers and the finger nails were white. The thymus appeared markedly enlarged by percussion. The further history of the case shows some points of marked interest. While making satisfactory progress the trained nurse left. At about this time the weight flattened and the baby became irritable, the peristalsis increased, with occasional spitting, and sleep was disturbed. This was ascribed to the fact that the mother having full charge of her baby for the first time had become nervous, and this condition was reflected in the baby. However, as the days passed with no improvement, the nurse was recalled, and 24 hours after she was back on the case all the symptoms witnessed at the first visit—crying, projectile vomiting, sleeplessness, visible peristalsis—presented themselves. The loss of weight was rapid, dropping from 10.3 pounds on December 16 to 9.8 pounds on December 19. The gastric peristalsis was of such a character that it was possible to grasp the stomach in the hand as though it were a ball, so rigidly

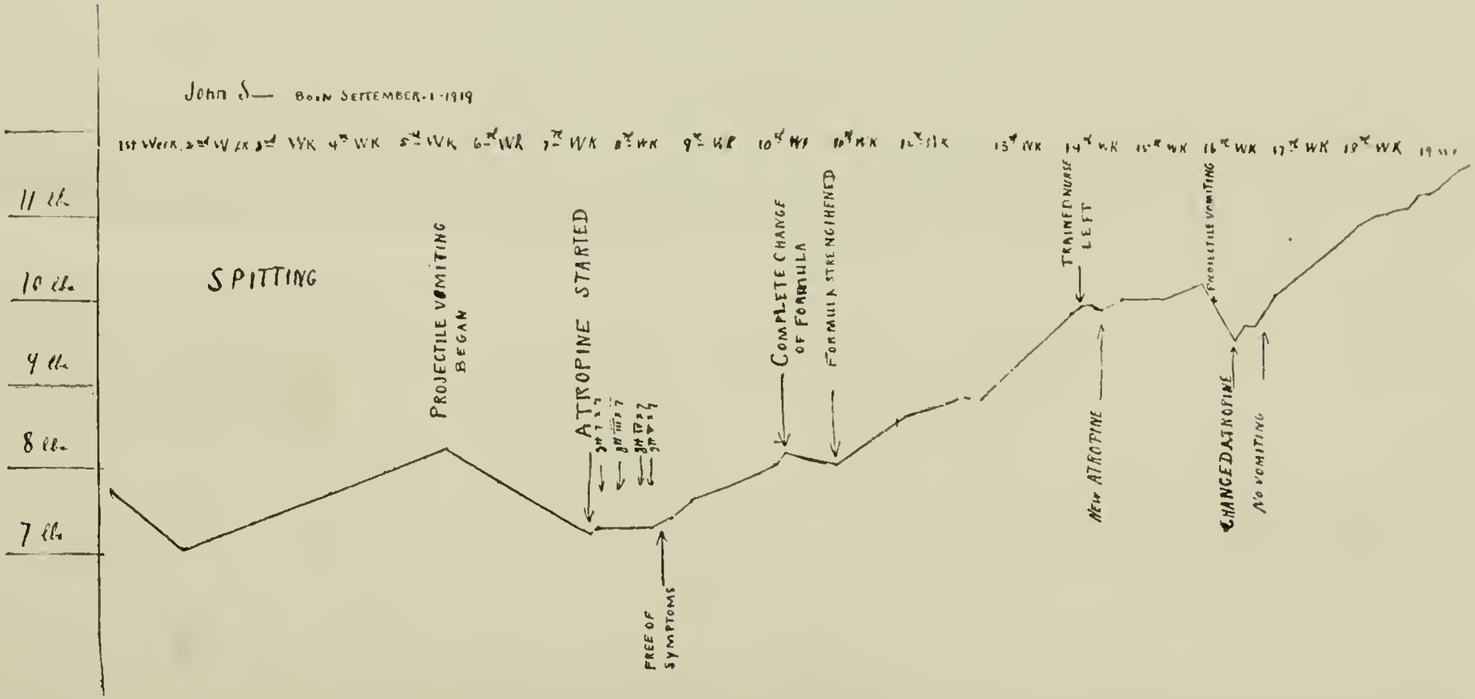

Fig. 2.—Weight chart of case 2—pylorospasm.

outlined and so protuberant was it. An analysis of the case at this time showed that when the weight began to flatten out atropin from a new supply had been given the baby. Atropin from another source was obtained, and with the administration of the first dose the symptoms began to improve until after four days they had entirely disappeared. This case also illustrates another point, and that is the symptoms were not entirely controlled until the required dose, in this case five drops of 1/1000 solution, was used. Now, at the age of 8 months, the baby weighs 19 pounds. It still requires two drops of atropin at each feeding.

3rd. Case of hypertonic infant with hypertrophic pyloric stenosis; William M., seen in consultation with Dr. A. W. Roff; born April 2, 1918, of healthy parents, was the second child; the first had been a normal, breast fed baby. Labor was normal, no asphyxia. Birth weight, 8½ pounds (estimated). Physical examination negative. The only unusual feature was vomiting before ever having been put to the breast. From that time to the present (April 20, 1918), the baby had vomited everything, sometimes immediately after the feeding, sometimes an hour or more after.

Attempts had been made to improve the condition by increasing the intervals, reducing the amount at each feeding, diluting, by preceding the nursing with water, by giving small doses of olive oil before feeding, by clearing the gastro-intestinal tract with castor oil.

The infant cried constantly, never slept and was emaciating rapidly.

There had been no food stools; no gas had been passed per rectum; there had been no urination; projectile vomiting about 7 times daily.

The physical examination of April 25 showed an infant which had apparently lost considerable weight, the estimated loss in weight since birth being from 1½ to 2 pounds.

Shortly after a breast feeding there was a profuse projectile vomiting. The abdomen showed distinct peristaltic waves. In the region of the pylorus could be felt a small mass.

The stools were greenish black mucus containing bile. The character had not changed since the meconium was expelled, and

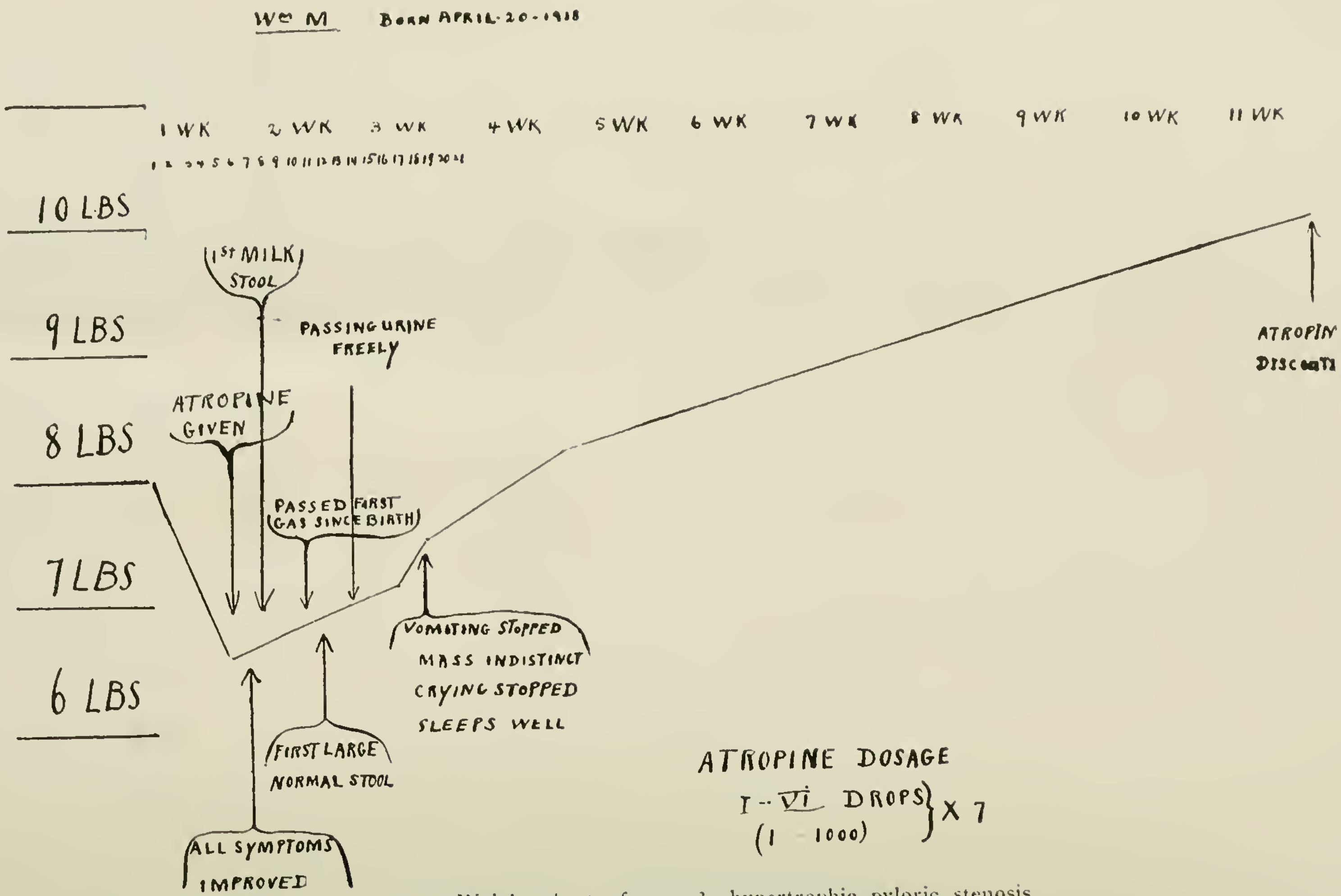

FIG. 3.—Weight chart of case 3—hypertrophic pyloric stenosis.

even now the stool looked not unlike thin meconium excepting for the mucus it contained.

The diagnosis of congenital hypertrophic pyloric stenosis was undoubted, with the single reservation of the remote possibility of a congenital atresia of the duodenum.

The treatment suggested was a breast feeding for five minutes every 2½ hours, preceded by the administration of one drop of a 1/1000 solution of atropin sulphate in one dram of water, to be increased daily by one drop at each feeding until physiological effects were observed.

The first dose was administered at 4 P. M. The 6 o'clock feeding was retained somewhat better than any previous feeding; according to the mother the crying, which had been constant, diminished, and during the next 48 hours, although there was some vomiting after almost every feeding, there were only three or four times in each 24 hours, when the amount was large and the character projectile. A very marked improvement.

Forty-two hours after the atropin was begun the first trace of milk stool was noted. Six hours later another stool showed somewhat more fecal matter. The crying had practically diminished to normal. The infant slept more.

April 28.—Weight 6 pounds 12 ounces (1st weighing), projectile vomiting, three times in 24 hours, receiving atropin 2 drops at each feeding. Increased to 4 drops at each feeding.

April 30.—Slight vomiting, three times; projectile; vomiting once in the past 24 hours. Passed gas for the first time since birth.

May 1.—First large normal stool; no projectile vomiting; now receives 5 drops of atropin at each feeding; 1/25th of a grain in 24 hours.

May 3.—Began passing urine freely.

May 6.—Weight 7.2 pounds.

May 7.—Until this date had occasional vomiting, and on this day once projectile.

May 8.—Passed more gas; bowels moved four to five times daily; nurses 7 to 10 minutes every three hours.

May 10.—Weight 7.8 pounds. Sleeps well; does not cry; rarely vomits; not at all in the past two days. Bowels move normally; stools of proper consistency and yellow. Physical examination still shows visible peristalsis. Doubt as to presence of mass. Receives atropin 6 drops seven times daily (42 drops of a 1/1000 solution), about 1/24th of a grain of atropin sulphate each 24 hours.

May 19.—Weight 8.3 pounds; gain 11 ounces in a week.

June 2.—Nursed every 3½ hours for 15 to 20 minutes; received drops before each nursing except at two nursings when drops were omitted. In past week has vomited twice at the two feedings when drops were omitted.

August 1.—Age 14 weeks. Weight 11.3 pounds. Atropin was gradually reduced until three weeks ago, when it was entirely omitted without recurrence of symptoms.

SUMMARY.

1. Hypertrophic pyloric stenosis is probably only an advanced degree of pylorospasm.

2. Both being manifestations in the syndrome of hypertonia (hypertonic infant).

3. The etiology is probably a disturbance in the physiologic action of the vegetative nervous system.

4. The vegetative nervous system is made up of two parts, the autonomic and the sympathetic; normally in balance, in this condition there is an overaction of the autonomic or vagotonia.

5. This does not gainsay the occasional existence of true organic stenosis of the pylorus.

6. Despite the brilliant results of many surgeons by the Rammstedt operation, in this condition an operation should be rarely required, and only performed after atropin has been given a trial.

7. Atropin properly used has been regularly effective in producing a cure.

8. At the present time the weight of authority would seem to indicate that hypertrophic pyloric stenosis and pylorospasm are two definite clinical entities.

In favor of this view is the existence of a cartilaginous hard mass of the pylorus in cases of stenosis, and the persistence of this mass long after a cure has been obtained by operation or otherwise.

a. Against this view is the experience of the last four years, all cases of pylorospasm, including four for whom operation had been advised, responded to treatment by atropin. A case of complete stenosis responded equally well.

b. Ransohoff and Woolley held an autopsy on an infant at 7½ months which had had a Rammstedt operation at the age of 2 weeks when a cartilaginous hard mass existed. At the autopsy this was absent and the pylorus patulous.

c. Rachford states that if the pylorus sphincter is so cut as to leave the orifice patulous and prevent muscular spasm of these fibers the pyloric tumor disappears.

d. Strauss, in a dissection of 65 tumors at operation, showed that the tumor was absolutely proportionate in size to the age of the infant, "which demonstrates that the tumor must be a progressive developmental affair."

e. The absence of fault in the arrangement of the normal histologic elements of these tumors speaks loudly in favor of a functional creation.

f. Rogers states that in fatigue the inhibitory impulses of the sympathetic system fail, and the vagus, then overacting, causes hypersecretion, hyperacidity and hypermotility or pylorospasm.

9. Among the arguments used against medical treatment is the sudden death, which not infrequently occurs. These are usually thymus deaths, and occur in cases operated as well as those medically treated.

10. Atropin is the logical treatment in these cases owing to its paralyzing effects upon the vagus nerve endings.

11. Certain facts must be borne in mind regarding atropin.

a. The inconstancy in value resembling digitalis in this respect.

b. Its rapid deterioration.

c. It must be used in sufficient dosage to be effective.

12. A common dose of atropin for an infant of this type from a few weeks to a few months of age is 1/50th to 1/25th of a grain in 24 hours, with an extreme of 1/16th of a grain divided among the days' feedings, a 1/1000 solution being used, beginning with one drop and increasing rapidly until effective.

13. The most frequent toxic symptoms are flushing, midri-

asis, dryness, which disappear promptly when the drug is withheld. There is no danger even when such symptoms present themselves.

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GASTROINTESTINAL HEMORRHAGE IN THE NEWLY BORN. (Revue Mens. de Gynécologie, d'Obst. et de Péd., Paris, March, 1919). Balard reports 2 cases in which, the second day after birth, there was melena, accompanied in one case by hematemesis. There was no excoriation of the mouth or of the breasts to which the hemorrhage could be traced, and the blood could not have been swallowed during the birth process as the blood was a fresh red. The tendency to hemorrhage kept up for 24 hours and then yielded to hypodermic injection of gelatinized serum (20 c.c.) plus 10 c.c. of serum from a horse that had been repeatedly bled. The blood of the newly born has not become accustomed to the new conditions of circulation, and mechanical factors readily explain the tendency to hemorrhage at this time. The arterial tension was rather low after the hemorrhage had begun, but it ran up above normal after arrest of the hemorrhages. This suggests that it may have been above normal to start with, but the hemorrhages had brought it down so low that infusion of these comparatively large amounts of fluids did no harm and only good.—*Journal A. M. A.*

ATAXIAS OF CHILDHOOD.*

By M. SEHAM, M.D.,

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The present text-book classifications of cerebellospinal ataxias of childhood are inadequate. The difficulties of establishing a clear, well-defined grouping of these diseases depend upon: first, the fact that cerebellar and spinal disease may present similar clinical symptoms; second, primary cerebellar disease may present no symptoms whatever; third, pathological changes in cases reported have shown too great variations; and fourth, these diseases are so slowly degenerative that the picture seen by the neurologist in later life may present an altogether different aspect to the pediatrist, who must diagnose the disease early in life.

A combined sclerosis of the posterior and lateral tracts of the spinal cord (Friedreich's ataxia) has been accepted pathologically and clinically as a definite entity since about 1868. The introduction of the terms, hereditary cerebellar ataxia, Marie-Nonne and the so-called congenital cerebellar ataxia, has complicated, rather than simplified, the classification. The Marie-Nonne type is of no importance to the pediatrist, for it occurs only at 20 years of age or over, but whether or not congenital cerebellar ataxia is a distinct entity with pathology different from Friedreich's, or whether it is a similar pathological process, the cerebellum stem being mainly involved, is still an unsettled and disputable question.

Batten in 1903 described 3 cases of congenital cerebellar ataxia, the full descriptions of which are included here. The characteristics of this disease are (1) a very early onset, (2) no other members of the family are affected, (3) cerebellar symptoms predominate over spinal, (4) improvement or recovery is noticed, (5) intelligence is normal, (6) knee reflexes are equal, and either normal or exaggerated.

The cases reported by Batten are incomplete. No post-mortem has been obtained in any of the reported cases and the period of observation was very short. With such insufficient data, there is no justification for accepting this set of symptoms into the nosology of medicine.

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*From the Department of Pediatrics, University of Minnesota.

CASES 1 AND 2.—Einer and Irwin N., twins; 6 years old; Swedish. Mother's father well; age 70. Mother's mother well; age 70. Father's father died of apoplexy; age 65. Father's mother living and well; age 65. No history of any nervous diseases or alcoholism in family. The mother is a strong, well developed woman of 30 years. Complains of rheumatism. Father is a carpenter; works every day. No deaths in family on either side. Both children have exactly the same history and the same symptoms. They were full term; born without instruments; labor 12 hours with no unusual complications. They were weaned at 2 months and given milk and water mixtures for the next 5 months. They had no feeding disturbances during the first year and had no diseases of any kind during infancy. Mother insists that they were perfectly all right during the first year. They did not tremble nor wobble, nor have nystagmus. They sat up at the 6th month; held heads up at the 3d month, and attempted to walk at 13 months.

It was not until about the 18th month that their aunt noticed that the children stumbled and were rather awkward in their movements. They were unable to hold things. They were taken to a physician at that time and he told them that it was just a weakness which they would outgrow. At 3 years the stumbling and difficulty in walking increased. The mother also noticed that their hands shook, especially when they tried to use them. There was also some trouble with their speech. Another doctor told them that the condition was St. Vitus' dance. At 5 years, there being no improvement, they were taken to another doctor and he removed their tonsils and circumcised them.

They were perfectly well except for above mentioned condition. They have never had any lightning-like girdle pains; no involvement of the sphincters or disturbance of the vision.

On March 7, 1919, they were seen for the first time at the University of Minnesota, Out-Patient Department. Children both look exactly alike. Bright, intelligent, well-developed and nourished. While they are sitting quietly there seems to be nothing at all the matter with them; it is only when in motion that the ataxia is noticeable. The heads are normal in shape and size. There is no twitching or tremor. They are perfectly straight. No scoliosis. No deformities of the feet.

Motor System.—The same applies to both children. They stand upright without support. They hold their feet slightly apart and sway, but do not fall. With feet together and eyes closed (Romberg's Sign), there is no increased unsteadiness. They walk with the typical reeling, side to side, gait, cerebellar rather than tabetic. The finger to nose test and the heel to knee test are negative with eyes closed as well as with eyes open. The plantar, cremasteric, and abdominal reflexes are all present. The knee reflexes are absent. They are able to walk up and down stairs normally and arise from the floor with just the slightest awkwardness. When attempting to pick up an object they do not hover over it and then seize it, as is described in cerebellar disease. They hold a glass rather tightly, but steadily. Quickly repeated pronation and supination of the hands shows no asynergism. The grasp of the hands is normal. The strength of the legs in pulling or pushing seems to be all right. They button and unbutton their clothes a little awkwardly, but rapidly and without any difficulty. They ride their bicycles just as well as any other boys. Eyes: Vision normal. No nystagmus nor strabismus. Eyes equal to light and accommodation. Ophthalmoscopic examination negative.

Speech rather slow, but not defective. Sphincters are normal.

Blood and Wassermann are negative. Von Pirquet negative.

X-ray negative.

Electrical reactions are negative.

April 25, 1919.—They both ride their bicycles for 4 or 5 hours every day with no fatigue. They are able to dress themselves and play any kind of games. The knee reflexes are still absent, and only by reinforcement can a slight response be obtained.

DISCUSSION OF CASES 1 AND 2.—Hereditary cerebellar ataxia, or a Marie-Nonne type, need not be considered here because of the age. The diagnosis lies between Friedreich's ataxia and primary cerebellar disease (Batten's so-called congenital cerebellar ataxia).

Etiology: The congenital nature in these 2 cases is in favor of the "cerebellar disease" and against Friedreich's. Of 72 cases of Friedreich's disease, reviewed both clinically and pathologically, only 4 showed symptoms before 2 years of age. However, in such a slowly progressive degeneration, the very early symptoms of delayed walking or awkwardness of motion can be easily overlooked. There is no history of heredity. This is somewhat against Friedreich's and in favor of the other. The fact that both the children are affected is in favor of the former and against the latter.

Ataxia: As can be seen from Table II, the ataxia in these children is marked in the lower extremities and barely noticeable in the upper. There is practically no bulbar involvement—a fact which would indicate that probably the spinal cord, rather than the cerebellum, is involved.

Mentality: The mentality is normal. Although this may occur in both conditions, it is more likely to be deficient in a cerebellar disease.

Knee Reflexes: This is of the utmost importance in differentiating between cerebellar and spinal disease. However, the knee reflexes may be different at different stages of the same disease. In early tabes, for example, the reflexes may be unequal and present. Then again Soca found in 26 cases of Friedreich's that the reflexes were increased in 6. Krauss states that in 100 cases of cerebellar diseases the knee reflexes were normal in 10 and absent in 12. The rest are not reported. The reflexes of the above children are absent or markedly diminished with both the hammer and the string electrogalvanometer.

Prognosis: The fact that the children have seemed to be getting better rather than worse is very much against a diagnosis of Friedreich's disease, yet the period of observation has been too short to make a definite prognosis.

Summary: The writer believes that the pathology is in the spinal cord and cerebellar tracts, rather than in the cerebellum. The absence of bulbar signs, absence of nystagmus and strabismus, the almost normal speech, the absence of knee reflexes, all point to a spinal disease. Although improvement has been noticed, it is too short a time to decide upon the prognosis. The diagnosis of early Friedreich's, rather than so-called congenital cerebellar ataxia, is made at the present time.

CASE 3, admitted to the hospital April 7, 1916, discharged October 10, 1916; 10 years old; in the 4th grade.

Family History: Negative. Father 32 years old and well; mother 32 years old and well. Normal birth. Full term. Perfectly well first year. Weaned at 1 year.

Previous History: Has had no other diseases.

Present Complaint: On May 16, 1915, mother noticed that he had some difficulty in walking. About a week or so after he had a fall. She does not remember the details of the fall (he walked as though he were drunk). In July he became worse and also had trouble with writing. He saw double. He is a well-developed, rather fat, child with a stolid expression. He is intelligent and comprehends everything that is said to him, but he answers in a very slow, uncertain and scanning voice. He is unable to stand alone. If he attempts to do this, he always falls backwards. He holds his legs wide apart and is in a state of continuous static ataxia. There is no difference in his standing, with his eyes open or closed. Has a convergent strabismus and nystagmus. Pupils are equal and react normally to light and accommodation. Has several carious teeth. His tonsils are somewhat enlarged, but not diseased. He has a positive Chvostek. There is marked incoördination of his hands, especially upon motion. Sensation is normal. The patellar reflexes are equal and greatly increased. Von Pirquet is positive. The right grip is 4½ L. S. and left grip is 3 L. S. The biceps and triceps are somewhat impaired, the left more than the right. The reflexes of the arm are normal. There is no hypertonus of the muscles. The finger to nose test and the heel to the knee are positive.

August 3, 1916, there is marked improvement in his ataxia. He is able to stand alone without difficulty. He can walk 20-40 steps without help. His walk is reeling from side to side, with a general shaking of the entire body. The slightest turn causes a fall. The urine is negative and the Wassermann negative. Blood shows hemoglobin, 80 per cent; red blood cells, 4,600,000; white blood cells, 8,000; differential count negative.

He was discharged on October 10, 1916, with some improvement. May 7, 1919, his father writes that the boy feels much better in every way. First of all, he goes to school and is up in his classes. He walks alone and sometimes takes trips 6 miles long, without any stick. His speech is much better; he talks faster and much plainer.

DISCUSSION.—The ataxia of all the muscles of the body, the nystagmus, the strabismus, the static ataxia, the defective speech, the normal intelligence and the exaggerated knee reflexes, all are quite typical of a cerebellar disease. The absence of vomiting, headache and vertigo, and the reeling to one side, rule out a cerebellar tumor. The parents insist that there were no symptoms before 7 years of age, a fact which is against the so-called Batten's congenital cerebellar ataxia. This case most probably is a primary degeneration of the cerebellum in which the pathological changes have become stationary.

CASE 4.—*Family History:* Mother always well. Had blood poisoning from infection on hand once. Has occasional pains in the right side which the doctors have told her are caused from the ovaries. Father is well, has never been sick a day in his life. Mother has had 16 children—14 children now living. He is the 7th child. There are 2 boys dead. Oldest child, a man, 24 years old, died this summer from "ulcers in stomach." Ninth child (boy) died at 2 years of croup "catarrh" (?) Mother has had no miscarriages. Mother knows of no mental trouble in family. Mother's oldest sister's child died of paralysis. Oldest living boy, 23 years old, is helpless.

Personal History: Full term, normal delivery, although difficult. Breast fed nearly 1 year, then given general diet, but always a great deal of milk, especially during the second year. Not a mouth breather, as far as mother knows. Bowels normal. Has had measles and whooping cough. Smallpox at 8 years. Patient first seen when 16 years old. Trouble started when he was 13 years old. "Ataxic gait—falling bumped into things." Has been "doctoring," but with no help. Gradually became worse until present condition. Feels fine, eats well, sleeps well. Only complaint, itching of feet. Doesn't want to do anything, but mother thinks he is as bright as other boys of his age. Three boys and one girl younger than this first boy are perfectly well.

Present Complaint: First noticed peculiar walk at 12 years. Gradually became worse until this last year, when he became much worse. Mentally normal, mother thinks. "Child complained of pain in back of legs soon after gait became peculiar." Can't use hands as he wants to. No difficulty about speaking.

Physical Examination: Well developed, fairly nourished, good color, poor turgor, does not look bright, slight drooping of upper lids. *Nystagmus*—no ocular paralysis, fairly large tonsils, some dental caries, *scoliosis*, heart murmur over entire precordium, systolic, lungs clear, *no patellar reflexes*, *marked ataxia* (general).

with athetoid movement when reaching for an object, partial webbing of the 2nd and 3rd toes. Circumference of head 53 c.m. Is very dull in response to questions, though mother states he is bright and talks well at home. Pupils react to light and accommodation. Ocular movement normal. No optic nerve atrophy. Ataxia not influenced by position of head, therefore not labyrinthine; spontaneous nystagmus not marked enough to be mentioned. Slight intention tremor, and speech slightly scanning. Wassermann negative. Unfavorable prognosis given on December 26, 1916.

TABLE I.

	Cases 1 & 2	Case 3	*Cases 4 & 5	*Cases 6 & 7
Congenital	+	—	—	—
Familial	+	—	+	+
Hereditary	—	—	+	+
1st Signs	18 Mos.	9 Yrs.	12 & 13 Yrs.	4 & 13 Yrs.
1st Seen	6 Yrs.	10 Yrs.	16 & 14 Yrs.	12 & 7 Yrs.
Ataxia	+	+ + +	+ + +	+ + +
Speech	Very slight	Marked Scanning Hesitation	Markedly Affected	Markedly Affected
Nystagmus	—	+	+	+
Tests Cerebellar	—	Finger to nose + Heel to toe +	Finger to nose + Heel to toe +	Not reported
Strabismus	—	+	+	+
Ophthalmoscopic	—	Not reported	Not reported	Not reported
Static Ataxia	—	+	+	+
Deformities	—	—	+ Scoliosis	+ Scoliosis
Power Muscles	Good	Fair	Poor	Poor
Intelligence	Normal	Fair	Fair	Good
Sensation	Normal	Normal	Normal	Legs diminished
Pupils	—	—	—	—
Romberg's	—	+	+	+
Reflexes Deep	—	+	—	—
Reflexes Skin	+	+	+	+
Length Observation	6 Mos.	1 Year	6 Days	1 Yr.
Improvement	Slight	Slight	No change	None
Diagnosis	Early Friedreichs	Cerebellar Ataxia Progressive	Friedreichs	Friedreichs

*From the private practice of J. P. Sedgwick, M.D.

CASE 5.—*Family History*: See brother's record (Case 4).

Personal History: Eighth child, 2 years younger than Case 4; breast fed, normal delivery, bowels normal. Has had measles, whooping cough and smallpox.

Physical Examination: General development fair. Enlarged cervical glands. Abdominal reflex present, *patellar reflexes absent.* No ankle clonus. No Babinski. No Argyll-Robertson pupil. Pupils react normally to light and accommodation. Ocular movements normal. Direction of falling not influenced by position of head. No spontaneous nystagmus. No optic nerve atrophy. No intention tremor. No scanning speech. Romberg present; brings hand to nose imperfectly. Curvature of dorsal spine to left. Slow of speech. Ataxic gait. Ataxia of arms. Tonsils diseased. Teeth good. Heart has a loud blowing systolic murmur heard best in left second interspace, transmitted down to apex; size normal; abdomen negative.

Prognosis: Unfavorable. December 26, 1916, Wassermann negative.

Discussion: Both of these cases are typical Friedreich's disease and need no discussion.

CASES 6 AND 7 are also typical cases of Friedreich's disease and are not reported in full.

BATTEN'S CASES OF CONGENITAL CEREBELLAR ATAXIA.

CASE 1.—D. S., age 4, was first seen in February, 1899. She was the first and only child, and there had been no miscarriages. The labor had been prolonged and instruments had been used to deliver the child. The mother was in good health during pregnancy. The child was brought to the hospital because she could not walk. She had not learned to use her hands until she was 12 months old, and, though she could talk, her articulation was so defective that it was difficult to understand her. She had always had difficulty in swallowing, and had to be fed very slowly; the difficulty was greater with solids than with liquids. She was intelligent and clean in her habits, and had never had any illness.

On examination the child was well formed and nourished; she could stand and support her weight on the legs, but was unable to walk. She always tended to fall backwards. When an attempt was made to walk, the legs were thrown about in a wildly ataxic manner. The head and trunk were in constant movement, and on attempting to grasp an object with the hands the most marked incoördination and intention tremor were exhibited. The head was well formed, measuring 19½ inches in circumference, and there was no deformity of the skull. The movements of the eyes were good in all directions, and there was no nystagmus. The optic discs were normal. The hearing was good; the tongue protruded normally; the hard and soft palate were normal. The back was straight, and there was no bony deformity of either of the limbs, feet or hands. The power of movement of the limbs was good, and there was no rigidity. The knee-jerks were brisk and equal. There was no ankle clonus, and the plantar reflexes usually gave extension of the great toe.

In October, 1899, she was seen again, and on this occasion could walk with great difficulty and showed the same tendency to fall backwards. In February, 1900, her walking had improved but she still tended to fall backwards. The head measured 20 inches in circumference. The knee-jerks were brisk, and the plantar reflexes were noted as giving an indefinite extensor response, *i. e.,* the big toe extended, the small toe flexed.

In May, 1900, her walking had greatly improved. She could walk by herself, but still tended to fall backwards. She had much less incoördination of the hands, but the articulation was still very defective.

In March, 1901, she walked fairly well, with the trunk held forward to a position resembling that of paralysis agitans. The incoördination of the limbs and trunk was still present, but was comparatively slight. The knee-jerks remained active, and the plantar reflexes gave varying responses, sometimes extensor, sometimes flexor. The child was 6 years old when last seen and appeared to have good intellectual development.

CASE 2.—H. T., aged 3 years and 3 months when first seen in June, 1902. He had learned to talk when 2 years old, and was bright and intelligent, but had never learned to walk. He was unsteady with his hands, and could only stand when his back was against the wall. He took food well and swallowed naturally. He was clean in his habits, but sometimes had an "accident," which greatly annoyed him. He was not passionate. He was the first of 2 children, and there had been no miscarriages. The mother said that she was in good health during pregnancy, but the labor was natural and rapid. The child was a well-nourished, intelligent little boy, with the slow, monotonous articulation characteristic of this affection; but he had in addition a lisp, so that he omitted the first consonant of a word; for example, he said "oor" for door.

He stood unsteadily, and seemed always likely to fall. He walked with the knees flexed and close together, like a patient with cerebral diplegia of a mild type, but at the same time there was marked incoördination. The legs could not be said to be rigid, although the mother stated that they were so at times. The knee-jerks were present, not very active; there was no ankle clonus, and the plantars gave a flexor response, though it was a response which was neither easy to obtain nor definite in character. All the movements of the eyes were good. The pupils were equal and reacted well to light. There was no nystagmus. The child sat up fairly well, but there was constant irregular movement of the trunk.

There was no curvature of the spine. There was no rigidity of the arms; the grasp was good, but there was marked incoördination of both hands on attempting to pick up a penny; the intention tremor was, however, slight. The child was seen again in December, 1902. He had learned to walk, but the gait was still ataxic. He could sit up, but could not balance himself in a chair without sides. The knee-jerks were brisk; there was no ankle clonus, and the plantar reflexes were flexor in type.

In March, 1903, he had made further improvement, but was still somewhat ataxic; knee-jerks were present.

In August, 1905, he was seen again. He was now 6 years old and well grown. He attended an infants' school, and was stated to have normal intelligence. He was still unsteady in walking, but the movements resembled those of chorea rather than ataxia. He could walk quite safely across the room, and could get up from the floor in a normal manner. His mother stated that he could now go upstairs, whereas formerly he had been unable to do so. His articulation was fairly good, but still had a somewhat jerky character. The incoördination of the hands was slight. The knee-jerks were obtained; the plantar reflex was indefinite.

CASE 3.—A boy, aged 2 years, who was seen in consultation with Dr. Sinclair, of Dundee. The boy began to walk at 18 months, and it was then noticed that he was very awkward in walking. On examination, when 2 years old, although he could with accuracy kick a small ball with the right foot, he was unable to do so with the left, and his attempts to do so were markedly incoördinate.

TABLE II.

AUTHOR'S CASES.		BATTEN'S CASES.
+	Congenital	+
—	Heredity	Not reported
+	Familial	—
6 years	First seen	4 years
Normal	Birth	Instrumental (prolonged)
Normal	1st year	Backward walking and talking
18 months	1st signs	From birth
Normal	Mentality	Normal
—	Static ataxia	+
Legs very slight	Ataxia	All over the body—especially legs—very marked
—	Nystagmus	—
—	Cerebellar tests	Not reported
— equal	Knee-jerks	+ equal
—	Tremor	+ (intention)
—	Babinski	+
—	Deformities	—
—	Optic discs.	—
—	X-ray (head)	Not reported
—	Blood	Not reported
Slow (normal)	Speech	Defective
Normal	Sensation	Normal
6 months	Length of observation	3 years
Slight	Improvement	Marked
Friedreich's	Diagnosis	Congenital cerebellar ataxia

Summary and Conclusion: From a review of 72 cases of cerebellar and spinal disease of childhood it seems most practical to classify these diseases from the standpoint of topographical diagnosis. If there is mental degeneration, there is probably a cerebral involvement. If the knee reflexes are increased and cerebellar symptoms predominate, especially the bulbar, a cerebellar disease is most likely. If there is ataxia with deformities of the spine and feet, a hereditary history, and absent knee reflexes, Friedreich's disease is most probable.

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DIET OF NEGRO MOTHERS (Jour. A. M. A., March 30, 1918). A. F. Hess, and L. J. Unger, New York, have followed up their former paper published in The Journal November last with a report of a more recent investigation on the adequacy of diet of the mothers of children suffering from rickets in the Columbus Hill district of New York City. The paper is illustrated with nine tables, giving their results of the study. The subjects were mostly West Indian negroes, and the change from a tropical climate, with a largely vegetable and fruit diet, to the food conditions of the crowded district in New York could hardly fail to have its effect on a race so subject to rickets, as the blacks. It is known that the negro in the tropics does not suffer from rickets, to any such extent as this inquiry has made clear, hence the value of such a study of diet is apparent. The fact that the diet has been changed so that meat has become one of the principal ingredients, to the virtual exclusion of fresh fruits and vegetables may, they say, well alter the metabolism of the mother, and have its effect on their off-spring.—*Journal A. M. A.*

ANEURYSM OF THE ASCENDING ARCH OF THE AORTA IN A BOY OF THIRTEEN.*

By Henry Heiman, M.D.,

New York.

This case is presented because of its infrequent occurrence and the interesting x-ray findings.

The patient, a boy of 13, was admitted to the Pediatric Service of Mount Sinai Hospital about 3 months ago. The family history records the death of the father from epilepsy 9 months ago; the mother had 2 miscarriages; otherwise negative.

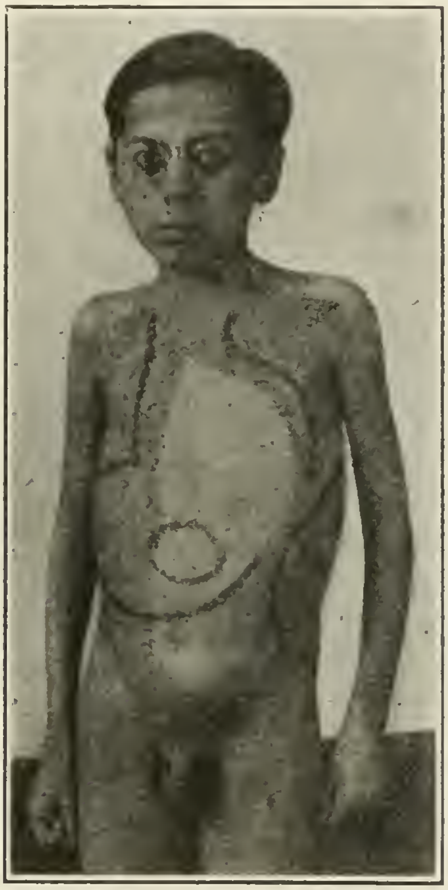

Fig. 1.—Patient, boy of 13, showing increased area of cardiac dulness. Note position of hard epigastric mass, probably a gumma. Spleen is markedly enlarged, extending to the iliac crest.

In the past history there were several attacks of acute articular rheumatism, the last one 3 years ago. With the exception of measles, 7 years previously, there were no other illnesses.

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*Read before the 31st Annual Meeting of the American Pediatric Society, held at Atlantic City, New Jersey, June 16, 17, and 18, 1919.

The present history dates back 8 years with a gradual onset of dyspnea on exertion, precordial pain and slight cough, which have grown progressively more marked. Recently he had been at the Montefiore Home and returned in fair condition.

On physical examination the interesting signs were found in the cardiac and liver regions. On inspection, there was a marked pulsation of the carotids and the apex impulse was seen considerably to the left of the midclavicular line. There was no bulging at any point, no thrill to be felt, or any expansible pulsation. No tracheal tug was present. Percussion showed the heart enlarged especially to the left, the apex was 11 c.m. from the right border of sternum. There was rather a wide area of dullness at the level of the 1st and 2nd interspaces, extending to the right 6½ c.m. and to the left 4½ c.m. from the midsternal line. On auscultation, there was a systolic murmur best heard in the 3rd right interspace and extending downward and upward. There was no bruit and the pulse was corrigan in type, and capillary pulsation present. Pulses were equal. The blood pressures in each arm recorded as varying only 5 m.m., 140 and 145 systolic and 0 dias-

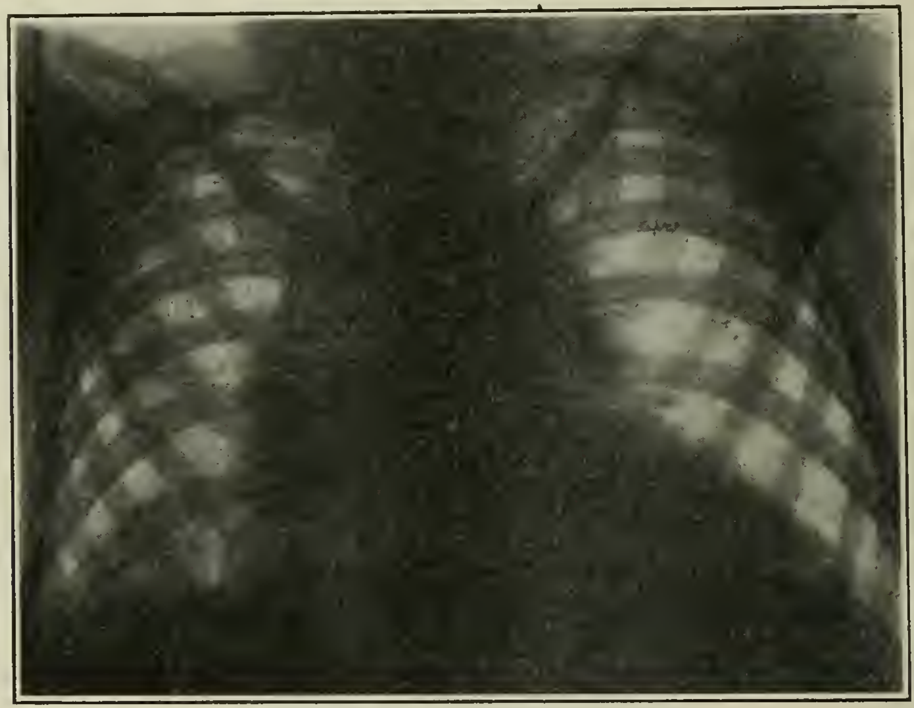

Fig. 2.—X-ray of chest showing enlarged heart with apex 11 c.m. from right border of sternum, with marked enlargement to right and left of sternum in the 1st and 2nd interspaces, indicative of an aneurysm of the ascending arch of the aorta.

tolic. The polygraph tracing showed nothing unusual. The electrocardiogram showed marked left ventricular predominance. notching of R in lead 2, inversion of T in all three leads. Fluoroscopic examination was especially interesting, revealing an aneurysm of the ascending arch of the aorta.

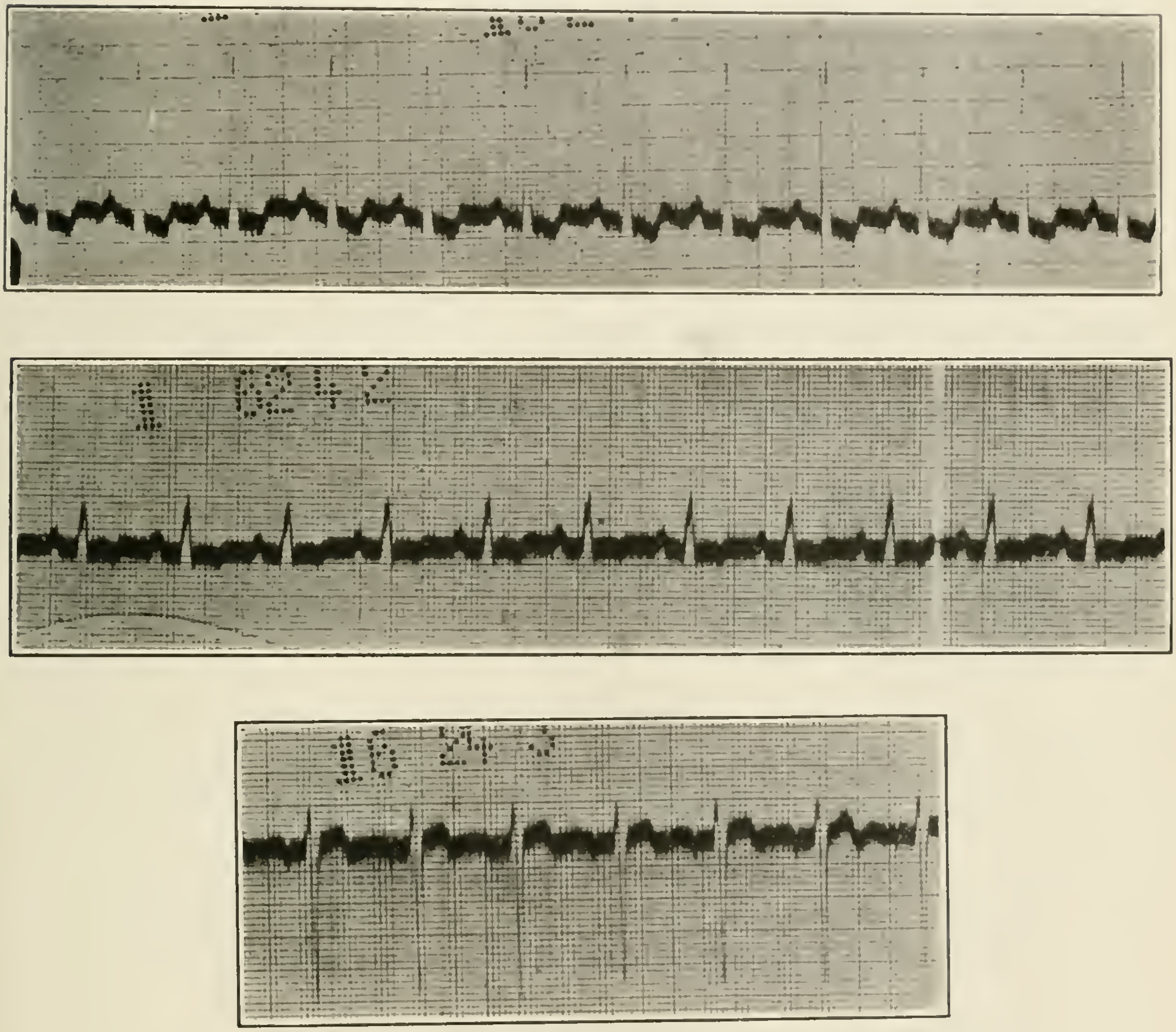

FIG. 3.—The electrocardiogram shows marked left ventricular predominance, notching of R in lead 2, inversion of T in all three leads.

The x-ray corroborated this finding. The Wassermann test was 4 plus. The mother's Wassermann also a 4 plus reaction. In the epigastrium there was a hard mass, rounded about 6 c.m. in diameter, extending down about 8 c.m. from the ensiform, movable, not tender, probably a gumma. The spleen was markedly enlarged, extending to the iliac crest. No palpable epitrochlears present. The teeth, although suggestive, were not typically Hutchinson's teeth. There were no other stigmata of lues.

This case is presented because of the great rarity of aneurysm of the thoracic aorta in children. Theodore Le Boutillier has made the most exhaustive study, in 1903. He collected and reported 14 cases in children under 16 years. In all, we have been able to collect about 20 cases in children. The etiology given in the majority of cases is very indefinite. In one, abscess formation in the thorax and secondary involvement of the aorta is given. Trauma and congenital valve defects are recorded in others. Rheumatism and bacterial infections are also mentioned. In only one case, that published by Willson in 1913, is there recorded a definite family history of lues, but no Wassermann report is given. This case is the first in a child of an unquestionable proven luetic aneurysm as far as we have been able to learn.

The patient has had 8 inunctions of 2.0 unguentum hydrargyri, and up to the present time no apparent improvement has been noted. Salvarsan has not been given on account of a possible danger in this type of case.

I wish to express my appreciation to Dr. B. S. Oppenheimer, in charge of the cardiograph work at Mount Sinai Hospital, for the tracings.

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14. Oscar Rie: Mirth. der Wein., Med. Dot. Coll. 1889. XV, 134.
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19. Horder, T. J.: St. Barth. Hosp. Rep. London. 1908. XLIII, 57, 60.
Boy 12 years—typical sign autopsy—ascending posterior cause not known—rupture.

20. Jordan: Lancet. 1903.
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64 *West* 85*th Street.*

JUVENILE PARETIC (Jour. A. M. A., Nov. 8, 1919). E. L. Hunt, New York, describes a case of juvenile paresis—a crippled and demented boy, aged 12, who, up to the age of 9, had been able to attend school, but after that was unable to keep up, and finally became too great a care to be left at home and was sent to the hospital. Treatment has been of no avail. The laboratory reported a markedly positive Wassermann test both in blood and spinal fluid, and butyric acid and colloidal gold tests were also positive. All the family were induced to take the Wassermann test excepting the father, who positively refused, and in all it was strongly positive.—*Journal A. M. A.*

EARLY NERVOUS AND MENTAL SIGNS IN SCHOOL CHILDREN.*

By Frederic J. Farnell, M. D.,

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It has often been stated that the study of the adult-neuroses and psycho-neuroses is "child study," as manifested by their distinctly infantile reaction and their youthful maladjustment. How interesting the study becomes when, however, early neurotic or psycho-neurotic manifestations appear in the child, with their defensive reactions leading to maladjustments and poor adaptations. Yet here, too, as in the adult, the physical symptoms carry the burden of the proof with the practitioner and the poor child is given rhubarb and soda for its indigestion, bromide for its nervousness, belladonna for its bed-wetting, a hard mattress and an open window for genital irritation and so on. Only when the child has gone beyond control is a study made of the personality or make-up, instinctive demands, emotional activities and the vegetative nervous system with its vagaries. Then, too, it is not at all surprising to hear the remark, "Oh! she will outgrow it," or "When he passes 13, 14, or 15 he'll be all right," or even "He'll change in 7 years anyway." These remarks may refer to convulsions, kleptomania, fits of temper, sex indiscretions or hemophilia —phenomena not recognized as having a physical basis. It is distinctly evident that the chief complaint, whether it be physical or psychical, is sufficient for an interpretation, and yet how many of these afflicted children later develop obstinate constipation or periodical diarrheas, polyuria and polydypsia, cyclic vomiting, car-sickness, etc., incident to neuro-physical symptoms and psychogenic convulsions, fixation of the libido in inversions, schizophrenia, psychopathies and endocrinopathies incident to these neuro-psychical symptoms.

It is not uncommon for many of these children to show a slowing down in their learning processes as a late manifestation of their nervous or mental twist, and hence they sooner or later appear at the psychiatric clinic connected with the board of education. If they are not out of school because of their physical incapacities they are excluded because they annoy the class-room, on complaints of mothers of children with whom the patient comes in contact, probation officers' reports, and so forth. Whichever environment results therefrom, whether it be home as the result of the physical complaint or the street as the result of the psychical maladaptation, anything but a proper adjustment can take place. The conscientious mother, the over-sensitive aunt and the abundance of creative sympathy only warms the roots of nervousness in children and nourishes future disorders. The street, with its alluring shops and maddening crowds, feeds the tendrils of psychopathies and inversions and it drives the seeds of conduct reactions deeper into mother earth, lessening the blooming of the flowers of behavior, shrinking and shrivelling the real beauty of a life.

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*Read before the annual conference of the National Association for the Study and Education of Exceptional Children held at New York City, April 30, 1919.

Let us refer to several types of cases: Case 1. A boy of 13 years in the 7th grade asks repeatedly to "leave the room" (diarrhea—frequency urination), which reaction becomes so annoying he was excluded from school. Physically he is somewhat oversized, well developed, with secondary sex characters normal. Emotionally more or less elated and happy. Vegetative system hypersensitive. Instinctive demands, with special reference to sex activities masturbatory; creative imagination, homosexual. By toning his vegetative nervous system and remoulding his mental sex habits he is now freed of his diarrhea and his urinary frequency is greatly diminished. Might he not be a future psychopath?

Case 2. A girl of 13, 6th grade, excluded from school for stealing. Physically well-developed and well-nourished, no evidence of secondary sex characters. Emotionally most unstable. Vegetative system, hypersensitive. Instinctive demands, masturbation (?) and sadistic activities. Upon examination it was found that it was only money she stole in order to buy candy. She has a probable high sugar tolerance (a developmental endocrine disorder).

This inter-relation and inter-functioning of the vegetative, emotional and endocrine systems is disharmonized and an attempt is being made to reach a harmony by analytical methods. Thus far it has been successful.

Case 3. A boy of 15 years, arrested for stealing a flash light. He is well-developed and well-nourished. Secondary sex characters fairly well developed. Emotionally reticent and quiet. Vegetative system negative. Instinctive demands, both physically and mentally, fixed in the homosexual stage (oftentimes dressed up and went out as a girl). Analysis of conduct reactions has not been completed, but he took the flash light and hid it in a cigar store—why, has not been ascertained thus far. But under analysis and the correction of his faulty mental habits, he has shown a far more normal environmental reaction. Might he not be a future invert?

Case 4. A girl of 13 years, 7th grade. At home because of illness, pseudo-meningitis. Well nourished and well developed. Secondary sex characters manifest. Emotionally unstable. Vegetative system hypersensitive; instinctive demands masturbatory. Creative imagination—incestuous thoughts and defensive conflicts. Observation and care with mental and moral support reached a complete recovery. Was she a case of hysteria, or is she a dementia precox?

Case 5. A boy of 14 years, 7th grade. Excluded from school because of inattention and refusing to play. A well-nourished and developed boy with manifest secondary sex characters. Emotionally quiet, reticent and timid. Vegetative system hypersensitive. Instinctive demands apparently a complete suppression of all sexual activities. Under analysis faulty mental sex habits, poor conduct response to feeling tone and peculiar behavior. With their correction and the training of a mother most sadly versed in child growth the boy has made remarkable progress. Might he not have been a case of schizophrenia?

And thus one recognizes that in all these children there is, as a rule, an emotional, a vegetative and a sexual disorder, which conjointly was manifested by one or two symptoms, and which disharmony had a far more serious outlook than the apparent seriousness of the symptom. These symptoms are in many cases merely defensive in type and as the result of a conflict.

It is only with a more thorough study of such disorders in children and their correction that the future generation will be relieved of a burden of caring for chronic invalidism, psychopaths, dementia precoxes and other asocial and antisocial problems.

NERVOUS AND UNSTABLE CHILDREN.*

By E. Bosworth McCready, M.D.,

Director, Wildwood Hall, Pennsylvania; Pedologist, Juvenile Court of Allegeheny County; Pedologist, South Side Hospital, Pittsburgh, Pa.

That nervous and mental ill-health is the most prevalent form of disease will not be denied by one who pauses to think of the number of hospitals and sanitaria, public and private, for the care of the afflicted of this class and of the cults, such as Christian Science, to name perhaps the largest, which owe their existence to the neurotic, to say nothing of the legions who crowd the physician's waiting room, conventionally loyal to regular medicine, though carrying on, perhaps, a mild flirtation with osteopathy, or chiropracty on the side. The well-poised, effective, emotionally stable adult human being is the exception rather than the rule in modern life. Procrastination in locking the "barn door" is proverbial and is particularly common in nervous and mental disorders. For this state of affairs both the public and the medical profession are to blame, but most particularly the latter. Physicians deride the efforts of laymen toward that little knowledge of matters medical which they consider renders patients dangerous to their own well-being. This may be proper, but is only justifiable when the physician elects himself monitor over not only the physical health of his clients but over their mental health as well, placing a higher value upon prevention than upon cure.

The neuroses and psychoses are not of sudden onset; in but few instances do they develop in a previously sound individual. They are with few exceptions the end-result of a long series of contributing factors, having their inceptions in early life and recognizable in early life by the conscientious and careful observer. Some children are born nervous (hereditary causes); some acquire nervousness (disease, habits, etc.); others have nervousness thrust upon them (faulty training at home and at school, and by other social causes of various kinds). Most nervous children must contend, in some degree, with all three causes. To counteract and to remove these causes in their various phases is, in so far as is possible, the duty (and the privilege) of the physician. If he fails in the exercise of this duty he is derelict.

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*Read before the annual conference of the National Association for the Study and Education of Exceptional Children held at New York City, April 30, 1919.

The difficult feeding case is such because the maternal supply of food does not agree with the child, or else because he fails to agree with the food. Either state is due to a deficient legacy of vital force, directly traceable to either or both parents. The maternal inability to furnish suitable or sufficient nourishment and the offspring's inability to metabolize either it or nourishment from other sources are often due to identical causes, directly transmitted. The proper development of the nervous system is dependent upon proper metabolic functioning. Anything that interferes with this—improper food, insufficient food, acute or chronic disease, fatigue, physical and emotional, and including that from reflex irritation—lays the foundation for future trouble. The danger signs are many and while not all are of equal import, none should be disregarded. In early infancy there are digestive disturbances; fretfulness; extreme sensitiveness to light and sound; convulsions; premature or late closing of fontanelles; premature or late dentition; precocity or delay in the development of muscular control; in talking; undue sensitiveness of skin and mucous membranes; thumb sucking; head rocking; thigh friction, and manipulation of genitalia. In early childhood may be mentioned constipation, perhaps alternating with diarrhea; anorexia and perversities of appetite; aversion to particular articles of food; night terrors; muscular twitchings, tics and muscular incoördination; stammering; lisping; idioglossia; enuresis; tremors of the fingers on extension; underweight; restlessness; irritability; perversity, sometimes amounting to negativism; phobias; extreme timidity; restlessness; fatigability; hyper-emotivity. If unchecked and uncorrected the above characteristics tend to aggravation as puberty approaches, and we may have definite negativism, stereotypy, and the typical "shut-in personality," psychasthenia, and that short-circuiting of consciousness included in the term "neurosis." From the physical standpoint, the nervous child may or may not present those anomalies known as stigmata of degeneracy; marked cranial and facial asymmetry; ocular muscular unbalance; myopia; hyperopia; astigmatism; adenoids and enlarged tonsils; prognathism; irregular dentition; nevi; deviation of the nasal septum, phimosis, etc. He may show evidence of ductless glandular dysfunction, may be obese with short stubby fingers, or slender with long bones and tapering fingers, may be sexually precocious, or puberty may be delayed, may take on sudden accesses of growth, or may fail to grow at the normal rate. In fact so closely associated and interrelated are the symptoms of deficient growth, energy and nervous insufficiency (adynamnia or asthenia) that the mutual and reciprocal action of each is apparent.

It is not necessary that we classify and label nervous children, as has been attempted, into those destined to develop dementia precox, those who will develop manic depressive, psychasthenia, neuroses and what not. The mere fact that the child possesses characteristics which stamp him a potential psychopath or neuropath is sufficient. If over-zealous, we will do no harm, for he will be all the better physically, mentally and morally, for the care that he has received. Treatment should begin as early in life as possible, in the prenatal period if possible, employing every means at our hand to allow nurture every opportunity for beneficient activity. Nature, in the form of hereditary tendencies we can not affect, we can only influence her results through nurture. The nervous child, particularly the one whose nervousness has been thrust upon him, disagrees with his environment: consequently the environment should be modified to meet his needs. Unfortunately the average private home, particularly the urban home, is conducted for the convenience of the adult members of the household, the children may fit in as best they can, just so they keep out of the way of their elders at those times when the "elders have no place to." If not this, they are subject to the opposite extreme of over-solicitude, over-indulgence, and inconsistency of management as harmful in its results as is neglect. Thus the treatment of the nervous child must begin with a modification of the immediate environment. It is often impossible for the child to improve while he remains in his own household; not necessarily because the home is essentially unfit, but because it is difficult to eliminate the causes which were originally partially responsible for the establishment of faulty modes of reaction. Again, no matter how solicitious and conscientious the parents may be, they lack the special training and experience which would enable them to deal effectively with a mal-adjusted child. This they have already proven, by the child's condition, and it is now time for some one with the necessary equipment to take a hand. If the child remains in his home, his regimen should be under the absolute charge of the attending physician, otherwise treatment is futile. Domestic arrangements must be modified and changed as conditions require; sources of friction must be removed; impatience, irritability and undue sympathy on the part of various members of the household must be curbed. The first consideration should be to see that the child obtains sufficient rest. Not only is easy fatigue a prominent symptom of nervous instability, but it is also a potent cause. Most children are over-stimulated by the conditions of modern life; conditions which, because they are usual, are considered normal. Fatigue in children brings about a nervous irritability which leads to further effort, giving the impression that the child is unusually energetic. Constant calls upon the reserves of energy, which should only be made in emergency, and very infrequently in childhood at least, may result in a condition of nervous insolvency, even more serious than the adult form. The constant din of the city streets, the vibration of street-car and automobile, the flickering glare of the movie, the strident blare of the graphophone, the constant hurry and bustle to be somewhere else as quickly as possible, all these have their effect for harm upon the delicate sensorium of the growing child. Equalling the importance of the prevention of over-fatigue is the regulation of the diet. We are accustomed to think of malnutrition as affecting only those of narrow means, yet a large percentage of children from well-to-do homes are undernourished. The school child, in the habit of sleeping until the last minute, comes to the table with time only to bolt one or another emasculated and widely exploited cereal whose only virtue is that it requires a large quantity of cream to admit of being swallowed. By the middle of the morning his tissues crave more nourishment, which craving is relieved at recess time by candy or highly ornamental pastry of low nutritive value. The edge of his appetite blunted, he makes a hasty lunch, grudging the time that might be used for play. In the afternoon again his appetite is impaired by some easily obtainable carbohydrate food and at dinner time he partakes of those dishes only for which he has the greatest liking. The result is that his diet, while perhaps not necessarily deficient in calories, is composed mostly of carbohydrates, causing an evanescent energy, but failing to provide for tissue wear and tear, for growth and for storage for emergency. Such diet, also, is poor in vitamines;

nervousness in children is often as much a deficiency disease as is scurvy or beri beri.

Fresh air, bathing, regulated exercise, all have an important place in the hygienic management of the nervous child. It is time for us to apply the lessons learned on the stock farm, in the raising of domestic animals and fowls, to the raising of children. The stockman has learned, in the few years that scientific animal husbandry has existed, that the three prime requisites for success, the stock being sound, are: diet, fresh air, exercise. He knows that to secure growth and vigor he must feed a balanced ration of proteids, fats and carbohydrates; that he must furnish sufficient roughage to give bulk to the intestinal contents; that he must give green stuff and other foods rich in vitamines and in mineral salts, not when convenient, but continually, even though in the case of the poultry-man he must sprout oats in his own kitchen. He knows that he must feed in proper quantities, depending upon whether growth or the accumulation of fat is his object. He also knows that no young animal will develop properly when confined in close quarters without sufficient air, and that to gain the maximum of growth and vigor all animals require range, free from crowding, from noise and from confusion. To the urban realist "pigs is pigs," but to the up-to-date farmer good pigs and other animals are balanced rations, exercise and fresh air. What observant swine-herd has not seen the "runt" of the litter, nosed aside by his stronger and more active brothers and sisters, equal or outstrip them all when given a trough and a run to himself. Our domestic animals are important and valuable, but are they more important and valuable than our children? Should more scientific study and care be devoted to them than to the individuals for whose purposes they exist?

Mention has been made of the difficulty of bringing about proper nervous adjustment in the child's own home. This is doubly difficult when that home is a city home and most difficult when it is that of the modern cliff dweller—the apartment or flat. City life is at best an artificial one for any human being, adult or juvenile; for the nervous child, it is poison. The gregarious instinct, abnormally developed into an unthinking habit, has not entirely superseded the innate love of natural phenomena in most individuals. The "back to the farm" craving of the average adult nearing middle life is but a manifestation of this fact. There is nothing so conducive to nervous stabilization as well conducted country life. It is here that the nervous child may be brought to realize what Cabot calls "the glory of raw materials," and it is here that the "human plant" may best receive the nurture that he requires.

It may be seen that I am a strong advocate of the "nature cure" for nervous and psychopathic children. "Nature sleeps in the plant, dreams in the animal, wakes in the man." Mere absorption through contact is not, however, sufficient, for "experience and not memory is the mother of ideas." The child must, to gain the best results, return to a fairly primitive mode of life, and though not, perhaps, obeying to the letter the mandate "study nature, not books," must "study nature, then books." The conventional cut and dried methods of the modern school room, depending largely upon memory and upon abstract reasoning, fail to properly hold and direct the attention of the child predisposed to nervousness, and to furnish the selvage which will prevent its unravelling. The study of nature, of bird, animal and plant life, and contact with the various activities of country life serve to bring about fixation of normal areas of interest and to eliminate abnormal ones. Herbert Spencer says: "To prepare us for complete living is the function education has to discharge." The Standard Dictionary in definition states: "It (education) includes not only the narrow conception of instruction, to which it was formerly limited, but embraces all forms of human experience, owing to the recognition of the fact that every stimulus with its corresponding reaction has a definite effect upon character." Thus education is but a particular application of the principles of mental hygiene.

IS FEEBLEMINDEDNESS ALWAYS AN HEREDITARY DISORDER?*

By Julius Levy, M.D.,

Director, Division of Child Hygiene, Department of Health, Newark, N. J.; Consultant and Supervising Expert, Division of Child Hygiene, New Jersey State Department of Health.

The problem of dealing with the mentally backward, defective or feebleminded is such a grave one to the individual, to the family and to society that it is well worth the careful consideration of all groups of workers. While the students of eugenics and heredity have made out a very strong case in favor of the theory that feeblemindedness is hereditary and that society, if it would protect itself from the vice and the crime and the inefficiency and dependency that flows from mental backwardness and feeblemindedness, must be willing to pass such laws and create such institutions that the feebleminded will not be able to propagate themselves. I think it is worth while to point out that the physician is able to offer some solace, some hope to certain types of mental defectives, that his great desire to heal and to help can be satisfied in some instance, even in this gloomy field of human affliction.

I believe that some of the forms of mental backwardness that actually develop into feeblemindedness are of a functional character and that these forms can be recognized very early in infancy by one who is thoroughly familiar with the normal development of a normal child, and thereby is very alert to detect and interpret delayed mental and physical development in the infant. Those who have seen cretins are familiar with the picture of apathy and dull stupidity that can result from the absence of one of the important internal secretions; can we not understand that it is possible to have various degrees of backward and defective mental and physical development resulting from different degrees of deficiency of one or more of the internal secretions?

On account of the very clear picture that results from the absence of the thyroid, either in myxedema or cretinism, we have recognized the potent influence of the thyroid gland and use it in conditions of extreme mal-development. It is only more recently, since we have understood more clearly the interdependence of the internal secretions, the principle of hormones, of one internal secretion becoming activated through the substance of another, that we have come to use what is called multi-glandular therapy in the treatment of mental and physical defectives.

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I think it is also correct to say that it is only in recent years that we have appreciated the influence of the internal secretions, especially when administered in the multi-glandular form, upon mild forms of deviation from the normal, of mild degrees of mental and physical backwardness.

This changed attitude in regard to mental deficiency is merely similar to the changed attitude to various nutritional and metabolic disturbances, as we can see by reviewing the recent literature on scurvy where it has been pointed out that while a clear cut picture of scurvy is easily recognized by almost every practitioner there are minor degrees of disturbed metabolism that are to be classified as forms of scurvy and are curable by the administration of minute amounts of antiscorbutics.

I have held the view that many mild degrees of mental and physical backwardness could be recognized early in infancy and if properly treated considerably ameliorated, if not cured, by the administration of progressive doses of thyroid extract, anterior portion of the pituitary and the thymus gland.

I shall not go into the details of the treatment before this audience, as I feel the purpose of my contribution to the meeting will be fulfilled if the fact is recognized that it is possible, first, to detect cases in early infancy that if not treated will progress to fully developed cases of feeblemindedness; second, that with proper management, training and treatment the conditions can be considerably improved, if not brought up to normal.

I wish to review for you just one of the cases that has been under my observation and treatment for a period of several years.

S. H., age 16 months, third child of healthy parents, was brought to me because it was not gaining properly. The child weighed 19 pounds, did not have any teeth, was unable to speak, stand or even sit alone; there was a very marked apathy and general hypotonia, the tongue hanging out of the mouth about half an inch and the expression of the face was vacuous, the low grade of sensitiveness was very marked as the child did not cry after rough handling, putting a tongue depressor far back into its throat or even after pinching it; the torsus was very markedly developed, while the lower limbs were disproportionately short and slight. The child showed no interest in her environment, did not follow objects, could not hold a toy in her hand and made no attempt to put anything in her mouth. While this latter practice of children is considered reprehensible by most mothers, it is ordinarily an important sign of normal development.

This child had been under the care of a very competent physician who had repeatedly said that the child was normal but merely slow in its physical development. I mention this merely as evidence of the tendency of physicians not to consider the possibility of general deficiency associated with physical barkwardness.

We have a child, then, with all the evidence of lack of mental development, as well as delayed physical development, and even delayed physical development appeared to me to be due, possibly, to the same deficiencies of the elements essential to growth because the child had received excellent care and had been relatively properly fed. The child was entirely breast fed until 5 months, then partially breast fed and weaned at 9 months; received fruit juice and vegetables at the end of the first year. It seemed to have gained a little up to the sixth month, then remained stationary a few months, and then, when it received additional feeding, it gained.

I considered the child, therefore, suffering from mental and physical backwardness and delayed development, the result of the deficiency of certain internal secretions. I placed the child on one-tenth of a grain of dried extract of thyroid gland and 5 grains of the thymus gland three times a day.

May 17, 1917. The child weighed 19 pounds.

May 29, 1917. Less than 2 weeks later, the child weighed 20 pounds, looked much brighter and was more active.

June 5, 1917. One week later, it had gained another pound, was much brighter and was interested in its environment.

June 19, 1917. The child began to make noises, cooing and babbling; previous to this it had made no attempt at speech.

It will be seen then, that after one month of treatment this child made a very rapid advance in general nutrition as evidenced by a gain of 3 pounds, though for the previous several months it had not gained at all, and that it also made a very rapid advance in its mental development.

Sept. 27, 1917. Three months later, the child weighed 23½ pounds, had 4 teeth, handled objects, followed objects, began to do "patty cakes"; there was a considerable change in its whole appearance; the tongue no longer protruded and the whole physiology of the child began to approach that of a normal infant.

Oct. 10, 1917. The child weighed 26 pounds, made attempts to stand, smiled when the mother spoke to her and played with toys.

Nov. 14, 1917. The child weighed 28 pounds 12 ounces.

Dec. 1917. The child crawled about.

Jan. 10, 1918. The child showed very marked evidence of affection and interest, especially in its doll, which it would kiss.

Feb. 22, 1918. The child stood without support, walked a little with support; would say "tick-tock" when a watch was put to its ear, and would blow a whistle if the toy was handed to it.

March 24, 1918. Tonsils and adenoids were removed.

Oct. 7, 1918. The child walked alone, although somewhat awkwardly; played with toys and understood and followed commands given by the mother.

March 13, 1919, is the date of my latest report when the child was a little over 3 years, weighed 38 pounds, had 16 teeth, walked freely, said a few words and was very actively interested in its environment. The appearance of the child has shown a most remarkable change as the general nutrition is not only of a high order but its whole manner and appearance is such that only an expert would recognize it as not of normal mental development.

After keeping the child on thyroid gland for 6 months and increasing the doses until it was receiving one-fourth of a grain three times a day, I added 2 grains of the anterior portion of the pituitary gland. This seemed to give considerable impetus to the mental and physical development and the child has been kept on thyroid and pituitary practically continuously for the past 18 months, with short intervals of one or two weeks. In addition to the medication, the mother was carefully instructed to give the child every opportunity to observe and handle objects of various form, weight and color and to take care of the child herself so that it would not be left with any hired help.

Of course, it is impossible for us to prophesy how far this child, or any child of this particular type, will develop mentally, but I feel satisfied that the administration of the thyroid, thymus and pituitary are of immense value to certain cases of mental and physical backwardness and that the best results will be obtained only when the pediatricians are given a chance to see these cases not later than 6 months of age and when they themselves recognize that various degrees of mental and physical backwardness, due to deficiency of internal secretions, exist and can be considerably improved by the proper administration of glandular extracts, combined with proper training and management.

Reeducation of Blinded Soldiers (Progrès Médical, 1918, XXXIII, 199). E. Ginestous declares that every minute is precious and not one should be wasted, from the beginning, to train the suddenly blinded. He is like a babe just born into a new world. From the very first, while still in the eye infirmary, his training in writing with a guide frame and in reading the Braille type should begin, without waiting to ascertain whether vision is entirely lost or not. A small broom or brush-making plant is now connected with each *centre d'ophthalmologie.* Even if vision is regained later, these exercises do not harm but fill up the leisure moments, while if total blindness is unavoidable, precious time has been saved. In his own service, Ginestous has been amazed at the rapid progress made by the men. In a few hours they learned to write with the aid of the frame. The Verdon-Richard *guide-mains* seemed to give the best results in this line. All the men could read and even write the Braille fluently by the time they left his service. All the men, besides, had been initiated into manual labor, such as weaving rugs, making brooms or brushes, resoling shoes, or doing light garden work.—*Jour. A. M. A.*

THE RELATION OF PHYSICAL AND MENTAL FACTORS IN THE DIAGNOSIS OF DIFFICULT CHILDREN.*

By Maximilian P. E. Groszmann, Pd.D.,

Educational Director of the National Association for the Study and Education of Exceptional Children, Plainfield, N. J.

The old saying, "mens sana in corpore sano," has almost degenerated into a threadbare truism. That is to say, in theory. Indeed, boards of health and medical school inspectors have here and there emphasized the physical factors of mental and emotional disturbances, and even in the moral conduct of children, and of adults, for that matter. Undernourished children have been fed so that they would regain mental vigor. Milk stations have been organized for babies to save them from physical and mental decline. And in a general way, much awakening has taken place in the practical application of the threadbare maxim quoted.

But there has rarely been made a systematic attempt to coordinate mental and physical symptoms. I may be justified in saying that through the efforts of this association the first steps in this direction were taken and encouraged. It has been my privilege, even before the founding of this association, as superintendent of the Ethical Culture School in New York, together with Dr. Franz Torek, to establish and develop the first complete system of medical examinations in this country (in the year 1891), and to correlate the findings with the disciplinary, scholastic and grading problems of the pupils. Really, of these early efforts the work of this association has been, in a measure, an outcome. That at the present time, in institutions for the defectives, and in the examination of juvenile delinquents, and in a few other cases, the doctor and the educator, the psychologist and the psychiatrist, the social worker and the probation officer work hand in hand, is to no small degree a result of these early demonstrations.

But we are only in the beginning of this new conception of educational factors. We have still to overcome much resistance, even from the parents, many of whom consider it an infringement of their property rights if their children are subjected to medical examinations in school. It may therefore not be amiss to point out a few facts in the relation of physical and mental factors in the diagnosis of difficult children.

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*Read before the annual conference of the National Association for the Study and Education of Exceptional Children, held at New York City, April 30, 1919.

A little while ago, a 16-year-old boy was brought to me who had become driftwood. His home surroundings were not favorable; his father was dead, his mother took in washing. An older brother had proven more or less worthless. He had been caught, in the company of some other boys, in a case of larceny. For quite some time he had not gone to school; when he had gone he was in a class for backward and defective children, making no progress. He could not obtain his working papers as he had not sufficient school grounding, and he earned a few pennies by haphazard work. An examination showed that the boy had a fair basic intelligence, but disorganized, or unorganized, knowledge, and was slow in comprehension. Written work, reading and ciphering seemed difficult for him, although he seemed to get the thought. He was diffident and unenthusiastic. There was some resistance and suspiciousness.

Further examination revealed the obvious physical causes of much of this mental and emotional condition. He was undernourished; his spine showed distinct scoliosis and there was evidence of rickets. He suffered from chronic enuresis, having a very long and sensitive prepuce. His eyesight was distinctly defective as to distance, clearness, accommodation and binocular vision; there was distinct astigmatism. He had had a running ear; there was defective hearing, and there were adenoids and hypertrophied tonsils. The bearings of these physical defects upon his conduct and mental progress are so obvious that no word need to be added. He was referred to the proper specialists. Glasses were prescribed; when it was found that an abscess had caused a perforation of the right ear drum, an immediate operation was performed, and his adenoids and tonsils were resected also. Now the boy sees, hears and breathes better and feels like a different being. Steps were taken by charitable persons to place his mother and himself under more hygienic and comfortable conditions; as the boy has consented willingly to work hard for obtaining a better education, he is now under private coaching and will make up sufficiently for his backwardness to obtain his working papers. His general health is under supervision.

This is only one case out of many thousands. Everywhere, and not only in the stratum of poverty, children are found languishing from lack of bodily and mental vigor, doomed to become failures in life, or who in the rebellious fight against obstacles which they do not understand and against misjudgments which are due to maladjustment, drift into misconduct and even delinquency.

One of the only too frequent conditions which lead to maladjustment and derailment is a psychopathic condition. It has been shown that many of the inmates of our prisons are psychopathic personalities, rather than mental defectives, as has often been wrongly asserted. This psychopathic tendency can be discovered in childhood.

Bain says: "The organ of mind is not the brain by itself; it is the brain, nerves, muscles, organs of sense, and viscera."

Naturally, then, any disturbance in any one or several of these "organs of the mind" will be followed by a corresponding disturbance in the functioning of the mind. It is for this reason that defective eyesight, defective hearing, disturbances in the alimentary canal, and a thousand other things have such a sinister effect upon normal, mental functioning. Emotional derangements are sometimes the first result of faulty physical conditions; and, as mental activity is intimately bound up with emotional states, the process of mental decline is plain. But it is not so well known that the number of children suffering from defective teeth (a frequent source of all kinds of ailments and troubles), from nasal obstructions, from eye-strain, from nervous disorders, from some deformity, from defective hearing, from tuberculosis and other difficulties is enormous. It has been estimated that not more than 25 per cent of all children are perfectly healthy. Of course, if we look over ourselves and our adult friends, there will be few who do not have, or have had, some ailment or another at some time or another. Many of these ailments, or their causes, they have carried with them since childhood, and these have been often enough the source not only of annoyance, of financial losses, but of positive derailment in their occupational conditions, of failure in life. If they could have been properly recognized and controlled in the early years of their life, much unhappiness and much difficulty could have been avoided.

It may therefore not be amiss to point out some of the danger signals that should be observed by teachers and parents. As fatigue is one of the most fruitful sources of trouble, I will reiterate here the well-known signs of approaching fatigue. Physical fatigue is indicated by depression of the angles of the mouth, furrows across forehead, wandering eyes, dark coloration beneath the eyes, a white line around the mouth, bluish spots on cheeks and neck, unusually slow or rapid pulse, frequent attacks of headache, awkward position of the body, a neurasthenic, shrill voice, unnatural action and a general appearance of depression. Mental fatigue shows itself by lack of ability to give attention, weakening of the power of perception, unreadiness and inaccuracy of judgment, diminished power of insight, loss of sensitiveness, lack of self-control, lessened work rate, lengthened reaction time, deep sense of misery in the morning, or one or more insistent ideas which cannot be thrown off.

It is evident that physical fatigue and mental fatigue, which in fact is nerve fatigue, go hand in hand. The two series of signs go parallel; are in fact only different aspects of the same thing. Fatigue must be very carefully observed and immediately heeded.

It was through Freud's classic investigations that the importance of the sexual element in mental and physical disturbance has become more and more recognized. Abnormal or excessive sexual stimulation during the pubescent and adolescent periods, manifesting itself in the form of masturbation and erotic dreams, accompanied by what we may call psychic lesions, plays a sinister part in producing fatigue. In looking for the sources of fatigue symptoms, this element must not be underestimated.

Abnormalities of growth and development are distinct danger signals. There may be irregularities in the matter of growth periods. Again, there may be faulty relation between body growth and mental growth. Mental precocity may be unsupported by healthy development of physiological function; or physiological function, e.g. in the matter of sexual development, may be unaccompanied by the balancing power of mental maturity. Body measurements and tests of physiological function, together with repeated tests of mental growth, are indispensable.

Facts of respiration and heart action, of headaches and dizziness, enter into this group of observations. Frequent urination is a danger signal. It means either distinct disease or lack of volitional control. Regular examinations of a child's urine should be made for the detection of diseases of the kidneys, diabetes insipidus, intestinal intoxication. There might also be examination of the blood for anemia, leukemia, parasites, inflammatory states, infection (syphilis), etc.; also occasional tests of the feces for ability to digest various foods, intestinal parasites, etc.

Rheumatism in childhood is dangerous for the reason of its insidious onset and never very acute manifestations. There seems to be a relation between rheumatism and chorea. Another insidiously developing trouble is heart weakness during the "fatigue period" between 7 or 8 and 10 years.

Some of the danger signals in the province of difficulties of the nervous system are changes in temperament and unwarranted attacks of temper; rapid fatiguing and disinclination for effort; drowsiness, excitability, insomnia, lapses of memory and concentration. But many of these symptoms may indicate rather disturbances in the trophic or vasomotor functions.

But while the facts of the relationship between physical and mental factors are legion, there is, as stated in the beginning, very little done as yet to systematically correlate medical, psychological, psychiatric and educational findings. There is too little organized co-operation between health and school officials, between social workers and physicians, teachers, parents, and so forth. What has been done and is being done is largely haphazard, spasmodic. Co-operation must become a working system, a principle of action, before we can hope to solve the problem of the individual child.

ABSENCE OF CLAVICLES (Jour. A. M. A., Nov. 15, 1919). A case of congenital absence of both clavicles is reported by W. G. Stern, Cleveland. No other anomalies were presented, and the child's muscles were as strong as those of other children. The absence is apparently a family abnormality, as the father and his three brothers have the same condition, but his sister is normal. The child has two brothers with this anomaly, making altogether seven males thus afflicted. The child has three sisters who are normal.—*Journal A. M. A.*

THE CLINICAL METHOD IN THE MENTAL EXAMINATION OF SCHOOL CHILDREN.*

By FRANCIS N. MAXFIELD, Ph.D.

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In the past 15 years mental tests have been given to thousands of children of different ages and of different degrees of mental ability. The results of these tests have been held to be a reliable index of the child's mental capacity and potential development. Examiners using the various revisions of the Binet-Simon scale, the Yerkes-Bridges point scale, the Pintner performance scale, and the like, often with little psychological training have interpreted their tests by rule-of-thumb. These standardized tests are so valuable that no one can question their usefulness. Exception should be taken to their arbitrary use in the hands of unskilled examiners rather than to these or any other standard tests in themselves.

The clinical psychologist makes use of these and other mental tests but does not insist on a rule-of-thumb interpretation of them. The clinical method implies an examination of individual children in which all the data available are considered as evidence. The results of the mental tests are given their proper place along with other data.

The facts of the child's family history and home environment are often significant and should always be obtained as completely as possible. The history of the individual child—prenatal conditions, birth history, development in infancy and early childhood, medical history, previous school history, social reactions at play or at work or in the family, unusual or abnormal tendencies, special interests and abilities—all these are a necessary background for the data of immediate observation.

The data of immediate observation are derived from a number of sources. The report of the physician's medical and physical examination, the report of the teacher as to present school work and relations to other pupils, statements of parents, social workers, probation officers, school nurses and the like, are all important in determining the present status of the child. The psychologist makes his own contribution by recording the results of his tests.

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He makes an analysis of the child's reactions under the conditions of these tests, making a sort of inventory of the childs assets and liabilities, comparing him meanwhile with other children who have come under his observation.

In many cases it is not sufficient to have data as to past history and present status. It becomes necessary to observe the child's rate of progress. This may be done by testing his ability to learn from experience or under definite teaching at the time of the examination. In other cases it is more useful to re-examine the child after an interval in which some program of medical care, changed environment, modified plan of teaching, or all of these has been followed. In mental as in physical development rate of progress often has more significance than the statement of the child's present condition.

After all the data are at hand as to past history, present status, and progress, the clinical psychologist must interpret the evidence thus obtained. Some statements may be more reliable than others. Obviously some facts must be given much more weight than others. If the child is partially deaf this one fact may outweigh all the others obtained.

In this weighing of evidence the rating of the child's intelligence is an important part. In a given case the results of some tests will have more meaning than others. Even the results of standardized tests must be interpreted rather than taken at face value. The concept of mental age, useful as it may be for popular use, is inadequate. The so-called mental age of the child is rather a mental age *score* and gives the psychologist a performance level rather than a direct index of intelligence. That a child of 12 has a mental age score of 6 does not signify that he has the intelligence of the average child of 6 but rather that, in the reactions called for in the test, his performance level is that of a child of 6. Terman's intelligence quotient, the ratio of mental age score to chronological age, is much more significant and is a more scientific concept, but even the intelligence quotient calls for interpretation, for intelligence is not a unit character but rather a complex of capacities. In such an interpretation the psychologist must make an analysis of this complex and to some extent evaluate the different capacities and disabilities which have produced a certain intelligence quotient in the case of the child under observation.

Too little has been done by psychologists in considering data available as to the emotional and social reactions of children. Prognosis of future progress and usefulness may depend fully as much on these reactions as on the intelligence.

Unfortunately the aim of a psychological examination has too frequently been understood to be the identification of the feebleminded. The psychologist is supposed to be on the lookout for feeblemindedness and to feel that his work is done when he says that A is feebleminded and that B is not feebleminded. This is not the function of the clinical psychologist. More and more he will have to do with children who are not classed as feebleminded. As a result of his mental analysis and interpretation of the data at hand he may be expected to make a mental diagnosis and to make recommendations as to future dealing with the child. In one case the child will be referred to the physician for treatment, in another the child's environment must be changed by educating the parents or by removing the child from his home, in others special teaching is necessary, etc.

The parent is not interested in the technical question of diagnosis. He wishes to know what to do with his child. The most important function of the psychologist is to make an analysis of the case and recommendations which will lead to the best possible development for the child.

The clinical psychologist is in a position to make contributions both to the pure and the applied science of psychology. Child study has previously been developed by the statistical and pedagogical methods and by the observation of a few individual children. The clinical method has already made valuable contributions to a genuine child psychology, but its possibilities in this direction are only beginning to be recognized. The usefulness of this method to applied psychology, particularly in educational and vocational lines, is being rapidly extended. In fact, applied psychology may be said to have developed from this method. Here it supplements various methods of group testing as in the United States Army where, of the million and a half men tested by the group method, some 40,000 were singled out for individual psychological examination.

Clinical psychology should also contribute largely to the solution of the problem of differentiation in elementary education to meet the needs of different types of so-called normal children. It stands for giving to each child in the schools an opportunity for the best development of which he is capable in preparing him for life.

CHRONIC TONSIL INFECTIONS (Jour. Lab. and Clin. Med., 1918, iii, 283.) Moore offers a discussion on chronic infections of tonsils, based upon the work of various investigators. He describes the anatomical structure of the tonsil, and he points out that because of its position and structure the tonsil is more prone to infection than almost any other organ in the body. Because of its position it comes in contact with the various species of bacteria in the mouth cavity. More important than this, however, is the deposition of these bacteria with food and other debris in the lumina of the crypts. Chief among the bacteria causing either acute or chronic tonsilitis is the streptococcus. Davis isolated hemolytic streptococci in the majority of 133 cases of tonsilitis which he studied. The patients had been suffering from chronic arthritis, endocarditis and nephritis, and although this streptococcus produced arthritis in rabbits, there is no proof that it is the causative factor. In almost all tonsils, pathological or not, hemolytic streptococci producing arthritis in rabbits can be isolated. The author here refers to Rosenow's theory that bacteria isolated from the apparent focus of infection will produce similar lesions in animals. Tuberculosis and syphilis are of considerable interest as chronic infection. Out of the author's series of 250 pairs of tonsils, tuberculosis was present in 2.5 per cent. Primary tuberculosis of the tonsil varies from 1 to 5 per cent., and the tubercle bacillus is rarely found in tonsillar crypts. Syphilis of the tonsil may be primary, secondary or tertiary, and varies from 6 to 55 per cent., women being most commonly affected. Actinomycosis of the tonsil has been occasionally described. Davis thinks no well-authenticated case of primary actinomycosis of tonsil has been reported. Diphtheroids are not uncommon as infective agents. Occasionally the pneumococcus is isolated, as well as the staphylococcus, B. diphtheria, B. influenza, and B. mucous capsulatus. The author emphasizes the importance of the tonsil as a portal of entry for numerous infectious organisms and that its removal may aid materially in controlling such diseases."—*Am. Jour. Med. Sc.*

THE BASIC PROCEDURE IN AN EDUCATIONAL SYSTEM FOR DEFECTIVES, WITH SPECIAL REFERENCE TO THE DEAF.*

By John D. Wright,

New York.

The procedure which I am about to suggest is probably as applicable to the problem of the education of all defectives as it is to an efficient system of education for the deaf. As I have devoted the past 30 years exclusively to the education of the deaf I only claim special knowledge of that phase of the problem of the educational handling of defectives, and my suggestions are primarily for them.

The first element in an efficient system of educating the deaf is promptness in applying the proper educational treatment.

When an Englishman, who was a great admirer of the writings of Bret Harte, met him in London, he naively expressed his surprise at finding Mr. Harte a gentleman of quiet culture and refinement. He had expected to meet a wild cowboy, or a mining camp gambler. "Oh, yes," said Mr. Harte. "I was arboreal in my habits as a child, but I was caught very young, you know."

So the deaf have to be caught very young if the greatest educational success is to be attained with them. They must be caught so young, in fact, that they are not yet candidates for school life, but require some modifications in home treatment as compared with children whose hearing is unimpaired.

The foundation of a successful educational system for the deaf must, therefore, be the establishment of some procedure by which official knowledge of their existence must be as nearly as possible coincident with the occurrence of deafness. If a child is born deaf the fact that he is deaf should be known to the proper educational officer of the state the moment that impaired hearing is suspected. If a child is left deaf by scarlet fever, spinal meningitis or some other of the numerous enemies of the hearing, the educational officer of the state should have that fact brought to his attention by the automatic action of some procedure established by law.

Ignorance on the part of the state of the existence of the deaf child results in delayed application of the remedial educational treatment, and this results in a less efficient citizen and so in loss to the exchequer of the state. Business sense dictates the stopping of this leak.

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I have given this matter a good deal of thought, and I am able to suggest a very simple way of establishing an automatic procedure that would protect the state from the loss which it now suffers in a large number of cases.

The first knowledge of the existence of impaired hearing in a child, whether congenital or adventitious, comes almost invariably to the general practitioner who happens to be the family physician. There is extreme reluctance on the part of all parents to acknowledge the existence of any defects in their children, and this reluctance seems to be stronger in the matter of deafness than in almost any other defect. Friends may suspect that a child is deaf but do not venture to suggest it to the parents. Even the family physician not infrequently hesitates to say what he thinks. If he says anything it is usually to suggest that the parents consult some ear specialist, by which process he shifts the responsibility to other shoulders.

The result is, as the principal of every school for the deaf in the country will tell you, that hundreds of deaf children go on for years without receiving the training that they need in order to fit them to live the most useful and productive lives of which they are capable.

This training should be begun in the home, before the child is of suitable age to attend the special schools established for his education, and with little or no expense, if the fact of the child's deafness was officially known. The best interests of the state demand this. Every deaf child is a tax upon the state, directly, if of poor parents, indirectly if of rich parents, by diverting money from more productive uses. Sound business dictates that the deaf child shall be so handled as to reduce this tax to its lowest point.

The state needs to know the fact of deafness as promptly as it needs to know the presence of some communicable disease in order to safeguard itself as far as possible from its effects.

The physician advises the parents to take the proper educational procedure, but he has no authority to compel it. His knowledge of the reluctance of parents to have the deafness of their children known and his professional ethics of silence lead him to say nothing publicly.

If, however, the law made impairment of hearing in a child of 12 years or younger a reportable matter, and the physician who failed to report a case was subject to the loss of his license to practice in the state, then no blame could attach to him for making the fact known to the proper authorities—and the parents could have no complaint that he had violated their confidence by revealing professional secrets.

The presence of even slightly impaired hearing in a little child is of much greater importance than serious deafness in an adult. If the child is less than 3 it will prevent his learning to speak or to understand speech, unless he receives very special training. If he is more than 3 and less than 12, it will either cause the entire loss of speech and language, or so retard and limit his progress that he becomes a costly charge upon the state. As the degree of deafness is greater, the results are increasingly calamitous.

When the physician reports the fact of impaired hearing in a child to the health officer of the community in which the child lives, it should be the duty of that officer to make a return to the central board at the state capital, and also to inform some local agency, such as the visiting nurse, the King's Daughters, the president of the school board, the day nursery, or whatever other organization has volunteered, or been appointed, to serve in such cases. It is perfectly possible to have some one in connection with one of these activities who has been trained in the knowledge that it is necessary to impart to the parents, and who is supplied with the literature that would assist them in the proper treatment of the child to prepare him to benefit to the utmost by the educational training that the state provides for him later. It would be possible, if that plan seemed wiser, for one or two persons to care for all cases in an entire state by periodic visits of instruction and advice, and by correspondence.

When school age was reached by the child, the fact of his deafness being officially recorded at the central bureau, the compulsory educational law should be invoked, if it was found necessary, in order that the formal instruction should begin at the proper time. The state expends large sums for this purpose. This is not philanthropy, it is good business. If these advantages are not accepted by those who need them, the loss falls upon the state as well as upon the individual, since those persons are less efficient citizens than they might otherwie have been. The state is interested from a purely business standpoint in making each individual as efficient as his mental and physical endowments permit. In the case of children with impaired hearing this is not possible unless treatment is begun very early.

1 Mt. Morris Park, W.

TESTICLE IMPLANTATION (Journal A. M. A., March 30, 1918). G. F. Lydston, Chicago, reports the later results of testicle implantation of two cases, which had been reported after the earlier operations. In the first a man aged 30 was operated on in August, 1915, after physical feminism and mental impairment and inefficiency had begun to appear. A rapid change in gain in masculinity was obtained and the improvement continued at the present time. The second case was a boy aged 13, who was developing almost as a girl, after losing function of both organs from orchitis. After a six months' treatment with faradism there was slight improvement, but after two years there was no improvement in virility. A double implantation was made as in the former case, and in 1916, sixteen months later, he appeared to be developing normally. In both cases the material was obtained from healthy individuals dying from accidental causes. The organs appear to be growing in their new position and Lydston believes the results will be permanent and that the operation is now past the experimental stage. In the boy's case an atrophied testicle was left in place and seems to be returning to a normal condition.—*Journal A. M. A.*

CLINICAL EXAMINATIONS A NECESSITY.*

By Hon. Samuel D. Levy,

Judge of the Juvenile Court, New York.

When we stop to consider the causative factors of delinquency, and learn that those factors are in almost every case wholly unknown to parents and guardians having control and custody of the child, and that the dynamic force of those factors in large measure is beyond the control of the child and that the child is absolutely ignorant of those factors, it behooves us as judges, who are to sit in judgment upon the anti-social act or misconduct of the juvenile offender, to learn beyond peradventure what those factors are, and how can we ascertain them except by and through the psychiatrist and clinical and medical examination.

No record of the social historian, or the psychologist, or the probation officer, or the Big Sisters or Big Brothers, or any other social agency, can give you the necessary information to make the kind of diagnosis required, which involves the real preponderating factors as those disclosed by the mental or medical clinic. If this fundamental statement is correct, it follows that every child coming into the Children's Court should be examined as to its mentality, not only delinquents, but also the children charged to be without proper guardianship, for these latter children combine the factors of congenital diseases, tubercular affection, malnutrition, blood and skin troubles, devitalization caused by starvation, anemia, psychosis in every conceivable form, from imbecility to high grade morons, degeneracy, super- or ab- and sub-physical conditions, neglect, and others too numerous to mention, and a clinical and medical examination of this class of cases turns up most interesting facts, without which no intelligent diagnosis, mental, physical or otherwise, and particularly mental, could be made.

If my premises be correct, then the psychopathic clinic should be attached to every court dealing with delinquents and criminals, minors and majors, every County Court having criminal jurisdiction, every Court of Sessions, Special and General, every Superior or Supreme Court trying criminals should ascertain the mental condition of the alleged offender before trial, and not after trial as it is done to-day, in what is supposed to be an enlightened age —a 20th century civilization! This is no theory, but a statement founded on facts and conditions shown at reformatories, protectories and prisons, where psychopathic examinations are made and where it is demonstrated that from 33⅓ to 75 per cent of the prisoners are mentally irresponsible and should never have been tried as normals, but should and would have been sent, after mental examination, to proper institutions for the cure of mental defectives.

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* Read before the Annual Conference of the National Association for the Study and Education of Exceptional Children, held at New York City, April 30, 1919.

And finally, I urge the great importance of establishing these psychopathic clinics throughout the state and country, wherever human beings are arraigned for delinquency, for crime or charged without proper guardianship, and I would urge as the best means of securing at first hand a full, complete and thorough knowledge of the inhabitants of our land, and as a preventive measure, to begin the mental examinations in the kindergarten under direction of the Board of Education, and follow it up throughout the child's educational career; in this way we will be able to discover the mental troubles of childhood at the fount and nip in the bud all or most of the untoward, abnormal and subnormal symptoms and evidences which give expression in misconduct, and in all probability before any serious misconduct or outbreak takes place. These school records will serve not only the child itself, but in time the progeny of the child, and we will be, as time goes on, better and increasingly better able to make both diagnosis and prognosis.

We speak of mental defectives. Why not at the same time speak of the super-child, who because of the present course of study as laid out by the Board of Education, is actually retarded, without right or choice, and we turn out the ablest children with the ordinary instruction given to just ordinary normals when we should strive to turn out brilliant children and afford their precocity the advantages they deserve by special course of study adapted for super-children.

REVIEW OF THE LITERATURE ON INFLUENZA IN CHILDREN.

By Rudolph Duryea Moffett, M.D.,

New York.

HISTORICAL.

About the middle of September, 1918, there developed in the Eastern States, particularly in Massachusetts, Rhode Island and Connecticut, reports of cases of influenza developing in adults and children. This influenza did not follow the usual course of other cases of influenza, which the medical profession had learned to know, but was of an acute type with blueness of the face, hands and feet, great toxemia and ofttimes ending in rapid death. There had appeared in some of the European medical journals reports of similar cases, particularly in the armies on the western front. The civil population was attacked also. The medical profession being engaged in war activity was unable to write any detailed accounts of cases observed. Undoubtedly many of the first cases were not recognized, patients often dying within 24 hours after the onset.

The army camps were particularly attacked, notwithstanding the fact that a certain amount of isolation and quarantine was attempted. The drafted men and others coming from the eastern part of Massachusetts, where it was raging, carried it into New York and to the army camps in the south, finally spreading it over the entire country.

BACTERIOLOGY.

The bacterial cause of this condition has been the subject of numerous investigations with conflicting reports from equally good observers, as to just what is the infecting organism. R. Tunnicliff,[38] at Camp Meade, isolated a green-producing streptococcus from the sputum in 87 per cent of 110 cases of influenza and pneumonia examined, cultures being made on the first or second day of the disease. The influenza bacillus was isolated in 58 per cent of the sputum cultures. The streptococci appeared in sputum smears as diplococci gram-positive, with slightly pointed ends and a capsule. In cultures they grew in pairs and in chains and also showed a capsule. The colonies were large, green, flat and moist with regular edges. They were not agglutinated by type pneumococci sera.

Opsonic experiments were made, with sputum stains of these streptococci, the opsonic power of the blood being estimated by the dilution method. The sera of 4 patients with acute influenza, and 10 with severe cases of pneumonia following influenza were examined daily. Later, in Chicago, the serum of 1 patient with influenza and 3 with influenzal pneumonia were examined for opsonic power, both for the green-producing streptococcus and the influenza bacillus. The activity of the leucocytes was also studied. These tests showed that specific opsonins for the green-producing streptococci isolated from influenza patients developed during the course of the disease.

A specific decrease in opsonins for the organism occurs in the pneumonia following influenza, persisting until the patient recovers, when it returns to, or may rise above, normal. These changes are specific for the green-producing streptococcus, no fluctuations being observed for bacillus influenzae, micrococcus catarrhalis, or streptococcus hemolyticus. These experiments indicate this green-producing streptococcus to be of some significance in influenza and its complicating pneumonia.

Accompanying the leucopenia of influenza, a non-specific decrease in the phagocytic activity of the leucocytes occurs, continuing until the patient recovers. This may account for the severity of secondary infections.

At Boston, Lieut. Comm. Rosevan, U.S.N., and his associates carried on experiments with the transmission of influenza in 68 volunteers, all of whom had been exposed to the epidemic; 47 had no attack of infiuenza in the recent epidemic; 39 had never had an attack. In the first series of experiments cultures of Pfeiffer's bacillus were instilled into the nose; results were negative with both non-immune and immune subjects (those who had had an attack in the recent epidemic).

In the next series, 30 men were subjected to inoculation with secretions from the upper respiratory passages of influenza patients, by means of spray, swab, or both, of the nose and throat. The results were negative.

In the third series the filtrate of secretion from influenza patients was inoculated subcutaneously into each of a group of 10 volunteers. These results were also negative.

At San Francisco, Surg. G. W. McCoy, U. S. Public Health

Service, and Lieut. De W. Richey, U. S. N., carried on another series of experiments, all with men who had not been exposed in the recent epidemic, and were presumably naturally non-immune, but who had been vaccinated with a vaccine containing Pfeiffer's bacilli, 3 fixed type of pneumococci and hemolytic streptococci. Of 10 volunteers, 5 had a heavy suspension made by emulsifying cultures of 8 strains of Pfeiffer's bacillus, instilled into the nostrils: the other 5 had the same material used after passage through a Berkefeld N. candle. Results in both groups were negative. In another series, emulsions of secretions from the upper respiratory passages of active cases of influenza were instilled into the nose. In each experiment an approximately equal number of volunteers were treated with the same emulsion after filtration through a Berkefeld N. candle. The results were negative as far as influenza was concerned. Three cases inoculated with unfiltered material developed sore throat corresponding clinically to tonsilitis. In 2 of these, an almost pure culture of hemolytic streptococci was obtained from the throat.

These experiments do not warrant final conclusions, but suggest an infective period at a very early stage of the attack.

MODE OF INFECTION.

A. Netter[25] noted that practically all children admitted to the hospital were from families where other children and one or both parents had influenza. Some children in the hospital for other diseases contracted the influenza there, before they could be isolated from influenza patients.

M. Wollstein and A. Goldbloom[40] stated that in 9 out of 18 cases no family contagion was indicated. In 7 of the cases there was direct exposure to family contagion.

I. A. Abt[1] reports 1 case developing in a new-born infant whose mother had had influenza 1 day before labor. The infant's symptoms developed so early that "we must assume it became infected before birth."

G. A. Friedman[10] suggests that the bedbug may be the carrier of influenza, as the louse is of typhus. The transmission of influenza by an insect must be in accord with the chief features of the disease: (1) the insect must be able to exist in all seasons of the year; (2) it must be able to gain access to rich homes as well as to dwellings of the poor; (3) it must retain the highly virulent microorganism for a limited time, approximately corresponding to the duration of the acute stage of the epidemic. The bedbug fulfils these conditions. The author believes they are both insect-borne diseases. He does not give any experimental evidence in favor of this theory.

C. Achard[2] found in most of the cases in infants, the mother was first attacked and was the source of infection for her child. In 3 cases, the entire family, father, mother and older children all had influenza. Only in 4 cases was the infant the only one sick in the family.

M. Wollstein and A. Goldbloom[40] report that cultures made from the sputum in 17 cases; B. influenza present 13 times, very numerous 11 times, overwhelming numbers, once; few, once. Other bacteria present were pneumococci, staphylococci, micrococcus catarrhalis, streptococci (in order of frequency). Pneumococci all of Type IV. In cases coming to necropsy, influenza bacillus cultivated from lungs in large numbers in all, but never in pure culture; pneumococci were grown from lung in 14 cases; m. catarrhalis 4 times, and streptococci once. The influenza bacillus was the same morphologically and biologically, as the strains from epidemic cases in other years.

I. A. Abt[1] found that culture made from organs of an infant dying from influenzal bronchopneumonia showed streptococci in large numbers; the lungs and spleen in addition showed a few colonies of staphylococcus aureus and albus.

A. Netter[25] reports in 3 cases in children, there was little expectoration, and bacteriological investigation was difficult. In 2 of these, the sputum obtained was mostly salivary, and showed only pneumococci; in the third, some blood was expectorated, and pure cultures of the Pfeiffer bacillus was obtained from this.

A. D. Smith[33] noted in 1 case, in which a swab from the throat was cultured, micrococcus catarrhalis and staphylococcus were found, but no influenza bacilli.

MORBIDITY AND MORTALITY.

H. Schultheiss[30] observed that in the early weeks of the epidemic very few children were ill; later on the morbidity among children increased and a number of cases came to the Children's Hospital at Basel. Infants, however, were relatively immune throughout the epdemic, only a few cases being reported. Only 5 children died.

W. R. Williams[30] noted, out of 230 cases of influenza in the second division of the New York Hospital, there were 33 cases under 16 years of age with no deaths. Later there were 2 deaths in babies.

A. D. Smith[33] reports 14 cases of influenza in children between 9 months and 9 years of age; all recovered; 9 cases of influenza and bronchopneumonia in children 8 months to 8 years old. One died.

D. Riesman,[29] speaking of the recrudescence of the epidemic in certain localities, says: "The age incidence in this second visitation is somewhat different from that in the first. Children are more frequently attacked . . . Fortunately a fatal outcome in children is rare."

M. Ostheimer[27] saw about 80 children with influenza; in only 48 were there sufficient data for tabulation. Three died of bronchopneumonia—the only fatalities in the 80 cases. In the 48 cases, there were 25 girls and 23 boys; ages varied from 3 months to 12 years. There were 18 under 2 years of age; 13 between 2 and 5; and 17 between 6 and 12 years of age.

A. Netter[25] states that the first 3 cases admitted to the hospital were children from a school in the suburbs. Three other cases were observed in the same institution, but not sent to the hospital. Later other children were admitted to the hospital. Most of the cases, however, were in adults.

M. Manges[19] found at the onset of the pandemic very few children were attacked. As the disease became more prevalent the number of children attacked increased, but the severity of the disease in them was much less marked than in young adults.

J. H. Hamilton and A. H. Leonard[12] found at a State Training School for Girls, Mitchellville, Iowa, there were 2 epidemics of influenza, one in November, 1918, one in January, 1919. The first epidemic was limited to 3 cottages; the second extended to other cottages that had escaped the first. There were 180 students at the institution between 12 and 18 years of age. One hundred and fifty-eight of these developed the disease. There were 2 deaths out of 76 cases in the first epidemic. Rigid quarantine maintained, but one teacher was permitted to visit outside before the second epidemic.

R. C. Derivaux and W. E. Hibbett[8] in analysis of the mortality in the influenza epidemic at Nashville, Tenn., report the following deaths by age groups (468 deaths, Oct. 1-Nov. 15, 1918):

Age Group	Number of Deaths	Percentage of Total
1 to 6 months	7	1.5
6 months to 1 year	15	3.2
1 to 2 years	42	9.0
3 to 4 years	32	6.8
5 to 9 years	36	7.7
18 to 14 years	20	4.3
15 to 19 years	40	8.6
20 to 29 years	110	23.5
30 to 39 years	83	17.7
40 to 49 years	46	9.8
50 to 59 years	14	3.0
60 years and up	23	4.9

Assembling the age groups into 4 arbitrary life periods, shows:

Life Period	Deaths	Percentage of Total
1 month to 9 years (infancy and childhood)	132	28.2
10 to 19 years (adolescence)	60	12.8
20 to 49 years (active adult life)	239	51.1
50 years and over (middle and old age)	39	7.9

One point worthy of special mention is a remarkably high death rate among female children; between infancy and the ninth year the deaths among females totaling 71, or 27.1 per cent of all female deaths and 15 per cent of the total recorded deaths in all groups. "No explanation of this observation has presented itself."

C. Achard[2] states that in spite of the fact that in the recent epidemic the disease has been comparatively rare in infants; he had 32 cases under 2 years of age in the crêche at the Necker Hospital. Of these, 6 were simple influenza, all recovered; 12 had bronchitis or slight pulmonary congestion, 1 death; 13 had bronchopneumonia, 7 deaths.

J. B. Hawes,[13] in the Westfield State Sanitorium for Tuberculosis, had 34 cases developed in the boys' ward after the admission of a boy from Gloucester. In the girls' pavilion 9 cases developed, evidently due to an attendant who returned from vacation with only slight symptoms. Only 2 children died, both with advanced tuberculosis.

A. A. Howard[14] reports out of 70 cases of influenza in children in private practice only 1 died.

T. F. Reilly.[28] In general the mortality was about 15 per cent below 5 years; about 5 per cent from 5 to 15 years. In children under 1 year, it was approximately 50 per cent; yet there were comparatively few deaths because pneumonia was not so frequent in children as it was in adults.

R. W. Keeton and A. B. Cushman[16] noted in the Cook County

Hospital cases numbering over 2,000 (same series as discussed by Nuzum), the total mortality was 31 per cent. For age group up to 8 years, 26.6 per cent; for age group 8 to 18 years, 18.5 per cent.

J. J. Levbarg[17] observed in some families, father, mother and 6 or 8 children would be stricken at the same time. In most families at least 2 were ill at the same time.

E. A. Locke[18] and others found in the 1,500 cases treated at the Boston City Hospital, the statistics show that relatively few cases were seen before 15 or after 50. The rise starts abruptly in the semi-decade 15-19. The death rate appears to be high for those under 5 years, to decrease sharply until the age period 15 to 19, when it increases rapidly to a maximum in the period 30 to 34.

C. E. Nammack.[24] No age was exempt. He had 1 case at 18 months, and 1 at 91 years, both recovering. The majority of cases were between ages of 15 and 45.

E. Sydenstricker.[36] Field studies in Baltimore, Md., gave the following results in regard to incidence of influenza at different age periods:

Age group	Number of persons	Cases		Deaths		Mortality per 1000 cases
		Number	Rate per 1000	Number	Rate per 1000	
Under 5	1,655	415	251.4	13	7.9	31.3
5 to 9	1,528	554	362.6	3	2.0	5.4
10 to 14	1,447	479	331.0	4	2.8	8.4
15 to 19	1,553	451	294.1	7	4.6	15.5

It will be noted that the mortality rate was high among children under 5 years, but that while children 5 to 14 were affected to a great extent, the fatality rate was low at these ages. This is of interest "in view of the emphasis that has been placed on the apparent immunity among children of school age as indicated by the mortality rate."

M. Wollstein and A. Goldbloom.[40] When the disease spread from army camps to civilian population, cases among children became numerous. Dr. Hatfield reports 50 cases under 5 years of age among 339 cases treated in contagious hospitals of New York City. At the Babies Hospital, New York, 36 cases of "bronchopneumonia with influenza" were admitted from Oct. 1 to Nov. 16, 1918, while during the same 6 weeks in 1917 only 7 such cases were admitted. Cases of pneumonia were also more frequent during this period than in the previous year—52 in 1918 as against 37 in 1917, with a mortality of 57.7 per cent as against 15.8 per cent in 1917. Of the 26 cases admitted to the hospital, 24 died. Eighteen cases came to necropsy and are especially studied.

S. W. Myers[23] feels that the remarkable feature of the epidemic was the mildness of the infection as it occurred in children. In his cases all recovered.

PROPHYLAXIS.

G. E. Friend.[9] At Christ's Hospital School for Boys at West Horsham, 800 boys, 39 cases of influenza developed following a visit of the school cricket team to Brighton; previously there had been 21 cases of the disease in various houses, but they were sporadic and milder in type than the 39 later cases. No complications in any case. During the holidays the infirmary was washed down, and mattresses and wards used for influenza cases disinfected. During the winter term all leaves of absence were stopped and boys kept strictly within bounds. Visitors, however, came to the school, and also non-resident masters and servants. Boys given "nose-drill" for cleansing the nasal passages, twice a day. A polyvalent influenza vaccine was also used, 186 boys not being inoculated for various reasons. Of the others, boys over 14 received a 70 million dose, those under 14 a 30 million dose. Thirteen per cent of the staff only were inoculated. Exercise was restricted, and temperature and other reactions carefully watched. No rise in temperature recorded; a few felt a mild general malaise; only 1 boy was sufficiently ill to report at the infirmary.

Although influenza was very prevalent in the surrounding villages, only 1 definite case of influenza developed in a boy who had been home to attend his mother's funeral (death from influenza). In addition, 36 cases of "chill" were admitted to the infirmary during the term, which may have been mild or modified cases of influenza. The duration of the illness in those cases was short (under 3 days), and there were no after-effects. The general health of the school was excellent, infirmary cases being fewer than in any other term since 1898.

The immunity to influenza the author attributes to several factors: (a) the physical training which, in force for 6 years only, had improved the physique; (b) the nasal drill; (c) the diet with a caloric value practically equal to the pre-war value for the first time since 1916; (d) the effect of inoculation.

M. Barnett.[3] At the Woodmere School, where the ages ranged from 4½ to 14 years, influenza was prevalent among the younger children. Parents were requested to supply each child with a gauze mask, 6 thicknesses of gauze, 4 by 6 inches, sewed together with tapes at each corner. Every child had such a mask. It was found that the masks affected the children's work unfavorably, and caused listlessness and lack of attention. A few cases of influenza developed. Use of masks was discontinued but if any child coughed or sneezed he was requested to wear his mask or to leave school at once. The masks were of doubtful value.

W. B. Stone[35] at the Ellis Hospital, Schenectady, prepared a vaccine containing chiefly the pneumococcus Type IV; no influenza bacilli. This vaccine was used by physicians of the city quite extensively, and several reported that where one member of a family refused treatment, that one would develop the disease, the rest of the family escaping. One physician was called to a family where 5 children were ill with broncho-pneumonia; a sixth child had escaped. The mother stated that this child had been at a neighbor's when that family were being vaccinated and had received the treatment with the rest. Other reports on the whole indicated that the vaccine did have a prophylactic value.

H. Mery[21] thinks that those who are ill should be isolated; children who have had influenza should be kept from school for 16 days, on account of the danger of contagion during convalescence. The linen and handkerchiefs of those who are sick should be carefully disinfected. Author recommends the use of an aqueous solution of collargol, to be snuffed up the nostrils daily as a preventative measure. Face and hands should be frequently washed, especially before meals. These measures are applicable in families and in schools.

PATHOLOGY.

M. Wollstein and A. Goldbloom[40] have found necropsy in 18 cases of influenza with bronchopneumonia in children showed a variety of pulmonary lesions making a characteristic picture of congestion, edema, general bronchitis, scattered pneumonic lesions differing in age, but involving 2 or more lobes; subpleural hemorrhages and pleural exudate. Capillary hemorrhages in the other viscera were constant.

I. A. Abt[1] reports the necropsy of a 3-day-old infant showed a widely disseminated infection with minute hemorrhages and a hemorrhagic bronchopneumonia, as well as a septic endocarditis.

SYMPTOMS.

H. Mery.[21] The initial symptoms are fever—and in the usual respiratory type, coryza, pharyngitis or laryngitis. In some types the fever is the chief symptom; in others, digestive disturbances, with vomiting and diarrhea; the most frequent form is the respiratory with marked congestion of the upper respiratory tract, sometimes extending to the bronchi and sometimes developing pneumonic and bronchopneumonic complications.

H. Schultheiss[30] found in the few infants who had influenza, the symptoms were slight; some coryza, bronchitis and slight dyspepsia were most frequently noted. In older children the symptoms were the same as those described in adults. In the cases with pneumonia, there was apathy, high fever, cyanosis, small rapid pulse and delirium. The respiration was not of the usual pneumonic type, but like the respiration of acidosis. In many there was leucopenia, but in 2 cases complicated with pertussis, a marked leucocytosis (100,000 per c.c.).

A. D. Smith[33] reports 9 cases in which the main symptoms were: pain in head, back and legs; cough; coryza; dyspepsia; cyanosis; irritability and crying; vomiting; chills in 1 case; drowsiness in 1 case. Consolidation was noted on both sides in 2 cases; in 2 cases, in right lower lobe posteriorly; in 4 cases, in left lower lobe posteriorly; in 1 case, in right upper lobe anteriorly. In discussing the symptoms of influenza cases in children Smith observed (14 cases) 3 groups of symptoms: 1. Temperature elevation with minor symptoms, 2 cases. 2. Temperature elevation with vomiting as main symptom, 3 cases. 3. Temperature elevation with cough or coryza as main symptom, 9 cases.

Physical examination showed marked prostration, rapid pulse, tongue heavily coated and white or sometimes brown; 7 of the patients with cough showed medium moist râles or dry râles; headache was a symptom in 5 cases; conjunctival suffusion in 2; pain in back in 2 and in legs in 1. It was not always those with the highest temperature who were sickest. Course of disease varied from 5 days to 3 weeks; average duration of 9 days.

Z. Sharfin[31] reports 1 case of influenza pneumonia in an infant of 15 months. Tonsils enlarged, pharynx red. Chest on percussion showed a slight area of dullness on right upper chest posteriorly, while on left side posteriorly the percussion note was slightly more resonant than normal; on auscultation a few fine râles at the area of dullness; no bronchial breathing. Respiration 36, pulse 96, temperature 102° F.

D. Riesman[29] feels that children, especially in the second visitation of the epidemic, showed a protracted fever 103° to 104° F., slight cyanosis of lips, delirium, cough, and a variable pulmonary involvement; a few râles in both lobes or one lung, or extensive consolidation. "The persistence of the fever is one of the striking features."

M. Ostheimer[27] believes that the 2 common symptoms noted in every case were the fever and the marked drowsiness, almost a stupor in some cases, present even in the infants of 3 months. The symptom next most common was loss of appetite; other symptoms were constipation and vomiting. Aches and pains so common in adults were noted in 13 children (27 per cent of the 48 cases tabulated), and only among the older children. Abdominal tenderness in 7 cases; sore throat in 7. The highest temperature varied from 100° to 105° F. Duration of fever also varied; in 33 per cent the fever lasted 3 days, in 50 per cent 3 to 5 days. A scarlitiniform eruption on the trunk was noticed in 1 case.

A. Netter[25] found in 3 children—the first cases admitted with influenza—that there was pulmonary congestion and bronchopneumonia; great prostration but complete recovery. In 3 other cases, not treated at the hospital, the disease was of the gastrointestinal type, with fever, vomiting and diarrhea.

M. Manges[19] noted in a child admitted to Mt. Sinai Hospital, New York, the abdominal pain was so severe and cramp-like and the rigidity of the abdomen so great that, in the presence of fever and absence of other symptoms, a diagnosis of influenza became apparent.

H. I. Goldstein[11] records the highest temperature in any of his cases as 106 1-5° F. in a small boy.

According to C. Achard[2] the initial symptoms were restlessness, some vomiting and diarrhea, refusal of food, then coryza. Temperature rose on the first day often to 39° C. Cough appeared later on the third or fourth day. In uncomplicated influenza, the symptoms were chiefly fever (39° C. to 40° C.), coryza, some cough, digestive troubles, some prostration. The temperature fell after the third or fourth day. Examination of the chest was negative. In the other cases, the chest symptoms were more marked, digestive troubles very slight, except in the earliest stage. The fever did not indicate the severity of the disease. Some simple bronchitis cases showed higher temperature than those with severe bronchopneumonia. Dyspnea, cyanosis, marked somnolence characterized the more severe cases of bronchopneumonia. Physical examination in the simple form showed scattering sibilant râles on both sides; in the capillary bronchial form, crackling râles of varying degrees in the bronchopneumonias, bronchial respiration and murmurs. But the extent and intensity of these symptoms did not give a true index of the severity of the disease.

I. A. Abt[1] had a new-born infant whose mother developed influenza one day previous to labor, the infant's skin became grayish-blue soon after birth, although the child had breathed promptly after delivery. Auscultation 10 minutes after birth revealed many fine moist râles in both lungs, no dullness on percussion. The next day the baby nursed well, but shortly after the respiration became labored and rapid (rate 120). Temperature never exceeded 100° F. and dropped to 97° F. Cyanosis became more and more marked; blood showed a white count of 21,450; on the third day finely crepitant râles were diffusely distributed over both lungs. Baby died on third day.

D. M. Cowie and P. W. Beven[7] say, at the beginning of the influenza epidemic at Ann Arbor, 2 children were sent to the Contagious Disease Hospital with diagnosis of scarlet fever; but no desquamation occurred either during their 15 days' stay in the hospital or later. Undoubtedly influenza cases. They complained of general pain throughout the body; had a moderate cough with throat slightly reddened; cervical glands slightly enlarged; temperature moderately high. No leucocytosis. A punctiform rash over face and chest; slight mouth pallor.

A. A. Howard[14] feels that the chief symptoms in children were cough, headache, slight digestive disturbances, pain in limbs not as severe as in adults; high temperature, injected eyes, inflamed mucous membrane of nose and throat (no exudate or patches), bronchitis. Delirium was present in the more severe cases. Children were susceptible in inverse proportion to their ages, and were less ill than adults. Children with pertussis, or but recently recovered from it, were ill longer and made a slower convalescence. Those developing disease in the first days of the epidemic were more acutely and suddenly ill.

Inspection was particularly valuable over other methods of physical examination in diagnosis and prognosis. The general appearance of the child indicated the severity of the disease more correctly than a study of the temperature, physical findings, etc.

R. W. Keeton and A. B. Cushman[16] found that the nasal discharge in children resembled nasal diphtheria, while the erythemas were quite suggestive of scarlet fever. Theoretically, pertussis in children might be mistaken for influenza.

C. E. Nammack[24] noted that some cases, "especially those in children," begin with marked gastrointestinal symptoms.

F. B. Talbot[37] considers the symptoms in older children as similar to those in adults; in younger children, less typical. Cough was a constant and distressing symptom, but there was less sore throat than in adult cases, and only a slight reddening of the throat; fever at times as high as 106° F., headache less than in adults; in some cases sneezing and discharge from the nose in the early stage; conjunctivitis present in a few cases during catarrhal stage; bronchitis. Blood examination showed a low white count in majority of cases, irrespective of prognosis. Only the sickest cases came to the hospital and are represented in this series (31 cases). Of these 13, 42 per cent, died.

In M. Wollstein and A. Goldbloom's[40] cases the children were not seen until they had developed pneumonia, hence early stages of influenza are not considered. Eighteen cases studied, temperature showed daily remissions and was irregular, ranging from 107° to 96° F. Cyanosis in all but 2 cases, marked redness of throat in 9 cases, normal in 7; not noted in 2. Blood examination showed definite leucocytosis in 10 cases, no increase in 3, leucopenia in 1 (syphilitic), in 2 no examination made.

R. J. Smith[34] found that most children have high fever with somnolence, while in others there may be restlessness or vomiting. He did not note any headache and backache. In very young children, vomiting and convulsions were observed. The cough was croupy, aggravating and very hard to control.

COMPLICATIONS.

H. Mery[21] feels that complication most frequent in the respiratory type is bronchopneumonia, pneumonia and capillary bronchitis. Purulent pleurisies do not often occur in children. Hemorrhagic complications are noted, especially epistaxis, intestinal hemorrhage and purpura. Otitis has not been a frequent complication, while Levbarg[17] found 4 cases with double otitis media, 3 of them in children, aged 4, 6 and 4, respectively. Two had mastoid operation, 1 of them dying of diffuse meningitis.

"Sixty per cent of the influenza cases which occurred in children were complicated by epistaxis." It was more frequent in boys than in girls. Only 2 cases noted in adults. In 1 case, a boy 6 years old, ordinary treatment failed to stop hemorrhage and horse serum was injected. One case of "false croup" in boy aged 7 who had influenza. Intubation and recovery. Larynx slightly edematous.

According to R. W. Keeton and A. B. Cushman[16] acute laryngeal obstruction developed in 6 patients aged respectively 1, 1½, 2, 4, 6 and 50 years. The condition developed in 4 cases at height of the disease, in 1 case in convalescence, and in 1 case 10 days after discharge. The symptoms were those of typical obstruction —cyanosis, laryngeal stridor, retraction of the episternal notch and xyphoid process, and non-productive and irritable cough. Tracheotomy was performed in all cases. Large amounts of pus and sero-sanguinous mucus was obtained from the tubes. Five of the cases died.

In (A. A. Howard[14]) 25 out of 70 cases in children there developed pneumonia of the bronchopneumonia type. Location of the lesions seemed to be nearly uniformly distributed between the 2 lungs with greater involvement of the middle and lower lobes. There were scant physical signs; patches usually small; individual areas clearing quickly; if disease was prolonged. this was due to new areas of consolidation. These cases ran a more favorable course than would usually be the case in a similar number of average bronchopneumonias. Aside from pneumonia and bronchitis, children were singularly free from complications.

M. Behrend[4] reports 19 cases of empyema operated following epidemic influenza. Of these, cases in children are as follows:

Sex	Age	Finding at Operation	Infecting Organism
Male,	12 years	Localized empyema on left side	Pneumococci and streptococci
Male,	2 years	Medium empyema on ribht side	Pneumococci
Female,	12 years	Localized empyema on right	Staphylococci
Female,	4 years	Localized empyema on right	Pneumococci
Male,	13 years	Large empyema on right side	Staphylococci and Pneumococci
Female,	8 years	Medium empyema on left	Staphylococci, Pneumococci
Female,	1 year	Large empyema on left	Pneumococci

The second case died from meningitis.

Author also notes 1 case where empyema was suspected in a baby who had been ill over 3 weeks. X-ray indicated pus on both sides of the chest, yet case was aspirated 8 times without result. Child discharged, cured, without operation.

C. K. Johnson[15] reports 1 child age 3 years, pneumonia followed influenza, both sides being affected. A double purulent otitis media also developed. Later, on admission to the hospital, symptoms of meningitis—rigidity of neck, child irritable on moving the neck, knee jerks slightly increased; Kernig sign absent; some stupor. Lumbar puncture showed cloudy fluid under pressure; influenza bacillus found and polymorphonuclear leucocytes predominated. At the second lumbar puncture, 30 c.c. of fluid was withdrawn, and 15 c.c. of convalescent serum injected intraspinally, with an equal amount subcutaneously. This treatment was repeated twice. Child continued to improve up to time of report.

H. Schultheiss[30]. In 2 cases, which were fatal, pertussis was a complication. All the fatal cases had hemorrhagic pneumonia. Severe nervous complications were very seldom observed; in some there were symptoms of meningitis; in others neuralgic pains. In one case a typical Landry's paralysis developed; in another paralysis developed in one arm. Both improved greatly, but the paralysis did not entirely disappear.

J. E. Sheehan[32] had one case, boy 9½ years. Eight days after an attack of influenza, patient complained of a severe frontal headache, and pain in both ears; pulse 132 per minute, respiration 43, temperature 104° F. Examination of right ear showed tympanic membrane congested; left ear, congestion along the course of the malleolus and of Shrapnell's membrane. Under treatment with ichthyolin glycerin dropped into ears and oily nasal spray of camphor and menthol, symptoms improved. Nine days later left ear membrane was bulging, and incision was performed, with large amount of sanguino-purulent discharge. Mastoiditis, however, developed and was operated under local anesthesia with good recovery.

Z. Sharfin[31] observed one infant following influenza pneumonia; when the temperature came down to normal, the child lay apathetic and quiet; would take food but did not cry when hungry. Later the child became drowsy and there was slight rigidity of the neck. Eyes reacted to light slowly; no Kernig; no Babinski. Diagnosis, encephalitis following influenza. Three lumbar punctures were made; fluid clear; no bacteria. Cerebral symptoms became more marked; rigidity of neck increased; there was a strabismus and a decided Kernig. Death.

M. Ostheimer[27] describes 43 cases of bronchitis and bronchopneumonia (89 per cent of 48 cases observed)—pneumonia in 14 cases, 3 per cent; bronchitis in 29 cases, 60 per cent. Other complications were severe epistaxis, severe and persistent sore throat, convulsions, asthma with persistent cough, cervical abscess noted in 1 case each.

S. W. Myers[23] had only 2 children with pneumonia, only a few had gastritis as a complication. One had otitis media. (Exact number of children in author's series of cases not stated.)

J. H. Hamilton and A. H. Leonard[12]. In a second epidemic at Iowa State Training School for Girls, the complications were few. Two patients developed otitis media; one of these had severe laryngitis. Convalescence was more rapid than in the first epidemic.

H. I. Goldstein[11] reports one little girl, who had influenza with pneumonia, developed a meningitis; no organism could be demonstrated in the spinal fluid at the first lumbar puncture. At the second puncture, a few meningococci found; anti-meningitis serum given.

C. W. Burr[6] has seen quite a few children from 8 to 12 years who were delirious; 5 who had pneumonia died in delirium or in subsequent coma. In several children there were distinct signs of meningitis, resembling the meningeal type of epidemic poliomyelitis; others showed the spinal-cord-symptom picture of that disease. Four imbecile children who had influenza were delirious during the acute stage of the disease; later their mental condition showed marked deterioration. In these cases the influenza caused rapid and permanent increase in already present weakness. This is not always the case according to reports from physicians in institutions for the feebleminded.

F. B. Talbot[37] reports in 31 cases in children only 2 developed empyema. It is the author's belief that all severe cases in this epidemic were complicated with bronchopneumonia, although in some instances the clinical signs are those of diffuse capillary bronchitis only. In the cases studied, all except one showed definite consolidation by auscultation, percussion and the x-ray. There was rarely lobar pneumonia; the bronchopneumonia type predominated.

J. W. Nuzum[26] and others had one child develop an acute and fatal mastoiditis.

K. Menninger[20] reports 100 cases of mental disturbance associated with influenza admitted to the Boston Psychopathic Hospital. The youngest patient was a male, age 16; the youngest a female, age 18. Below the age of 18 "no serious mental complication is common."

E. A. Locke[18] and others report a complete paraplegia due to a myelitis which appeared in a girl of 8 on the third day after the temperature became normal.

A. D. Smith.[33] In 14 cases: otitis media, 2 cases; nose bleed, 2 cases; tympanites, 1 case; furunculosis, 1 case; cyanosis, 1 case; bradycardia, 1 case, during convalescence. Nine additional cases are reported with bronchopneumonia as a complication.

A. Achard.[2] In one case tuberculosis followed the grippe.

TREATMENT.

M. Ostheimer.[27] Routine treatment consisted of plenty of fresh air, keeping windows open always, and even keeping child out of doors on sunny days. Sufficient covering to prevent any chilling. Drinking of water was encouraged, infants being given water frequently in the bottle. The chief drug used was magnesium sulphate given in doses varying from 1 to 4 teaspoonfuls, diluted in 3, 4 to 5 teaspoonfuls of water, given every morning as long as the fever lasted. When there was vomiting, lime and cinnamon water, half and half each, were given in teaspoonful doses every half hour for 8 or 10 doses, followed by salts, or by citrate of magnesia in doses of ½ glass, repeated in 3 or 4 hours when necessary. For the cough, at the onset of pneumonia or bronchitis, 5 drops of syrup or wine of ipecac in 2 teaspoonfuls of water were given every 2 hours for 5 or 6 doses, till the cough became looser. When the cough persisted with expectoration, syrup of the iodide of iron was kept up after meals for some weeks.

When the fever dropped to 99° F., or less, a strong, bitter tonic was begun, such as tincture of nux vomica, bicarbonate of soda and compound tincture of gentian, given before each meal.

Children were kept in bed after fever had subsided, being allowed to sit up in bed for a short time daily; later allowed to sit up in a chair, but most of them were not allowed to go about until the second week, some not until the third.

As an antipyretic H. Mery[21] prefers pyramidon, preferably in the form of pyramidon camphorate.

Quinine may be employed in the early stage of the attack. Warm baths are also useful (38° C.), repeated 2 or 3 times a day. For the debility, and where there is any tendency to collapse, camphorated oil in doses of 2 to 4 c.c. is most useful. Adrenalin may be used specially where there are symptoms of bronchoplegia. Acetate of ammonia is also useful as a stimulant. In case of secondary infections, antipneumococci or antistreptococci serum may be used. Where there is vomiting, the author recommends especially sodium sulphate in doses of 5 to 20 grains, according to age. Where there is bronchial congestion, indicating the danger of pulmonary complications, emetine hydrochloride given subcutaneously in doses varying with the age gave excellent results. It may be repeated 2 or 3 times. In cases where there is circulatory hypotension, rapid pulse and pallor, strychnine and spartein are indicated; where there is cardiac insufficiency with cyanosis, digitalis.

A. H. Wright.[41] In a boys' school, where he observed the epidemic, the cases were put to bed when the first symptoms appeared, whether they were sneezing, coughing or had pains or aches of any kind. Over 80 were attacked and all recovered. This is important in the care of children as well as in adults; children should not be treated for "little colds" for a day or two without medical advice when influenza is prevalent. No vaccine was used.

S. W. Myers.[22] Used phenacetin, in the treatment of adults, for reducing fever and aborting the disease. In children, on account of the milder infection and the depressant effects of phenacetin, he used aspirin with good results; in a few "obstinate cases" in children, combined aspirin with phenacetin.

H. I. Goldstein[11] in treating children, as well as in adult cases, used combined influenza and catarrhalis vaccine. No ill effects; temperatures of 105° and 106° F. came down 4, 5 and 6 degrees in 24 hours. Smaller doses may be used at first; if repeated injections are indicated, larger doses should be used.

J. R. Brinkley[5] used a specially prepared hypodermic compound for influenza in children which he had previously used in other children's diseases where there was fever. This consisted of aconite ⅛, bryonia ⅛ and asclepias 2 minims to each 10 minims of the mixture. With this he was able to control temperature without increasing nausea.

J. B. Hawes[13] states that Dr. Chadwick of the Westfield (Mass.) State Sanatorium found tincture of aconite in doses of 1 to 4 minims hourly in the febrile state, combined with sweet spirits of nitre, very effective with children (tuberculous cases).

A. A. Howard[14] found that the most effective treatment consisted of fresh, cold air, free catharsis, forced fluids, supportive treatment with soft solid foods after first 12 hours; early treatment of throat with potassium chlorate in large doses.

S. W. Myers.[22] Adults react favorably to phenacetin and caffein citrate, while children react favorably to aspirin and sodium bicarbonate. This may be related to the milder result of infection in children.

F. B. Talbot[37] believes that careful and individual nursing is most important. Plenty of fresh air; children on covered porch did best; plenty of liquid with as much food as can be digested, especially carbohydrates. Liquids taken should be 50 per cent more than necessary in average health. Abdominal distension treated with carthartics, enemas and stupes. Normal salt solution, when body is not receiving enough liquid, acts as powerful stimulant; given intravenously in older children; into longitudinal sinus in infants. Glucose may be added to the solution when this procedure is necessary. Other stimulants did not prove valuable in these cases.

A. D. Smith[33] had all patients receive castor oil on admission; 10 of the 14 received influenza combined vaccine (Mulford) in small doses 1/10 c.c. of D. strength. If no reaction, repeated on first, second or third day, doubling the dose. In one case temperature fell to normal within 24 hours after the vaccine. There was some local reaction, but no bad effects in any case, and the vaccine seemed to help in the majority of cases. Among the drugs used were digitalis, aspirin, salol and phenacetin, caffein, camphor in oil, ammonium iodide and ammonium chloride, creosote carbonate. Author prefers camphor in oil and digalen hypodermatically for stimulation. The creosote carbonate by mouth has a beneficial effect on both respiratory and intestinal tract.

R. J. Smith[34] feels that gelsemine hydrobromide is "a certain remedy" in children in high fever, flushed face, full bounding pulse, given in the early stages with aconitine hydrobromide, and calixiodata, the latter especially for the cough.

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PRESENCE OF MENINGOCOCCI PURPURIC ELEMENTS OF MENINGOCOCCAL INFECTION.—Cerebrospinal meningitis is sometimes accompanied by petechial eruptions. (British Journal Children's Diseases, 1917, xiv, 101). A. Netter and M. Salanier have shown that these cutaneous hemorrhages are not due to intoxication, but the result from the deposit of meningococci around the vessels. In two cases microscopic examination of the contents of the vesicles showed meningococci, although in the first there was no meningitis, and in the second case the meninges were not attacked until several days after the onset of the disease. Purpura may occur some days before the meningeal involvement. The latter may remain latent indefinitely or even be absent altogether. The demonstration of the meningococcus in the skin lesions will confirm the diagnosis. It will give us information more quickly than blood culture which alone has been in use hitherto and of which the results are far from constant. An early diagnosis is of the utmost importance, because such a diagnosis will enable us to undertake rapid and intensive serotherapy, all the more necessary owing to the special gravity of these cases.—*American Journal of Obstetrics.*

DEPARTMENT OF ABSTRACTS

Richardson, R. R.: Types of Pneumococcus in Lobar Pneumonia. (The Journal of Laboratory and Clinical Medicine, May, 1919, p. 484.)

In this paper, Richardson discusses the prevalence of pneumonia, the various types or groups into which the strains of pneumococci are divided, the comparative mortality of these groups and the results of serum treatment. He states that pneumonia in recent years has become one of the greatest scourges of the civilized world, and that the reports of our health departments show it to hold first place as a cause of death during several months of the year. The treatment has been mainly supportive, nothing having been found to directly combat the disease.

In their study of the varieties of pneumococci, Dochez and Gillespie divided the strains into 4 groups which they numbered 1, 2, 3 and 4, differing from each other only slightly morphologically but immunologically were entirely distinct. The mortality of the different types varies greatly as shown by Cole, type 3 being by far the most fatal, type 2 being considerably less so, and type 1 slightly less than type 2. Type 4 is not nearly so severe an infection and has a correspondingly low mortality. A study of the symptoms of these groups shows a marked similarity in the leucocytosis, and in the percentage of cases with cough and pain. With regard to dyspnea and chill there is a considerable difference, for groups 1, 2 and 3 show a higher percentage of dyspnea and a lower percentage of chill than group 4.

Of the complications studied, including meningitis, pulmonary tuberculosis, delayed resolutions, lung abscess, empyema, and endocarditis, about twice as many were found in type 4 as in any other group. In questioning the patients regarding what they considered the cause of their pneumonia, it was found that a large number of those with type 4 infection were able to remember a distinct occurrence,as exposure to drafts while warm,etc.,to which they attributed their illness. Type 4 organisms are commonly present in the mouth, forming a constant source of infection in cases such as these. Patients infected with the typical groups, i.e., 1, 2, 3, became ill without apparent cause, resembling the onset of a true epidemic infection, without a noticeable loss of resistance preceding. Nichols, working on pneumonia in the army, where, on account of age and physical conditions, diminished resistance should not be a large factor, found 78 per cent of cases caused by typical types. The lowered resistance preceding type 4 infection may account for the greater number of complications with that organism. The number of cases in which the type has been determined show that at least one-fourth of all cases are type 1, which is now amenable to serum treatment, and that from one-half to three-fourths are caused by typical types for which we may hope to have a satisfactory serum later.

J. HOYT KERLEY.

BEADIE, W. D.: TUBERCULOSIS IN CHILDREN. (Minnesota Medicine, May, 1919, p. 181.)

Beadie states that the treatment of tuberculosis should begin by taking measures in earliest infancy for its prevention, as the onset of trouble in after life is in many cases to be regarded as a reactivation of an early infection, brought about by a lowering of resistance in the individual due to excessive mental or physical strain. With this end in view persons actively tuberculous should not be permitted to marry. Prenatal care should be given, the expectant mother being watched and given advice necessary for her own and the child's welfare. Children born of an actively tuberculous mother should be removed to a safe environment immediately after birth, it being made compulsory that such mother refrain from nursing, and relinquish the child to the care of healthy persons. Mother's milk probably does not contain tubercle bacilli, so that the disease is apparently spread by intimate contact with the patient. Every infant, infected with tuberculosis, will almost surely die before the age of 2 years, so that it can readily be seen how a single exposure is dangerous, making it very important to prevent such an occurrence. Relatives with chronic coughs should be looked upon with suspicion. Maids in a household and those having care of young children should be carefully scrutinized. The law requiring cattle to be tested should be more stringently enforced, and, if this cannot be done, the milk should be pasteurized. More fresh air is to be allowed in the homes. Inspection of schools should be maintained and adenoids, bad tonsils, and teeth should be carefully examined and treated. Finally, education among older children is advisable by means of lectures, especially when carried on by health officers and physicians. J. HOYT KERLEY.

HADEN, R. L.: THE CEREBRAL COMPLICATIONS OF MUMPS. (Archives of Internal Medicine, June 15, 1919, p. 737.)

Mumps generally is not a serious disease, orchitis being the most common complication. Recently some fatal cases have been reported and Haden claims that death is probably always due to cerebral complications. He collected from the literature the reports of some 150 cases with cerebral complications. Many things point to the conclusion that the condition is an encephalitis and not simply a meningitis. In most cases the cerebral symptoms are out of all proportion to the meningeal reaction, as evidenced by the spinal fluid. The common symptoms are high fever, headache, nausea and vomiting. Usually there is only slight rigidity of the neck and not a well marked Kernig. Numerous cases occur of undoubted involvement of the cerebrum alone. In these cases there are no definite meningeal signs and no pathologic findings in the spinal fluid. Among the symptoms noted were unilateral convulsions, monoplegia, hemiplegia, aphasia, speech disturbances, psychosis, disturbances of sensation and stupor. These symptoms point to involvement of the brain substance. Other symptoms, such as bradycardia, headache, vomiting and optic neuritis, are probably due to increased intracranial pressure. Lumbar puncturing in the few cases in which it has been resorted to has given a clear fluid under increased pressure, with a lymphocytosis. He gives a detailed report of one case. C. A. LANG.

BEEKMAN, MARCUS: BLOOD TRANSFUSION. (Southern Medical Journal, August, 1919, p. 487.)

The author describes a simple method of blood transfusion which requires no special skill, nor special outfit, and which can be successfully performed by the general practitioner. He claims a number of objections to his method, which, however, are more theoretical than real. He recommends the Moss test for the demonstration of the compatibility of the donor's and recipient's blood, which can be done in about 15 minutes. The sterilization of the skin of the arm should not be done with iodine, for it has an injurious effect on the blood which flows over it. Washing with a bichloride of mercury solution, and then with alcohol and drying, or even with the alcohol alone, has proved to be entirely adequate. The arm is now greased with sterile oil or vaseline, and the vein is punctured. An assistant places in each of 2 sterile, dry, graduated drinking glasses enough of a 10 per cent sodium citrate solution (made in 0.9 per cent sodium chloride) to make the citrated blood contain 1 per cent citrate when the glass is full; that is, one-tenth of the capacity of the glass is citrated saline. The glass is now held under the arm and the blood allowed to run over the skin and fall from the point of the elbow into the citrate. Care must be taken that the stream flows directly into the citrate and not down the side of the glass. Thorough mixing must be maintained by constant stirring with a glass rod. This rod also must not come in contact with the blood stream, as in either case clotting will occur. The blood is then poured into a flask through a funnel containing several layers of gauze. If it is desired that the blood should not come in contact with the skin, it can be allowed to flow through a paraffined tube. The citrated blood can now be administered to the recipient at any convenient time without fear of clotting.

C. A. LANG.

GEMMILL, WILLIAM: THE ARREST OF BLEEDING IN CERTAIN DISEASES OF THE BLOOD. (British Medical Journal, July 5, 1919, p. 13.)

The following method has been found effective in small wounds, such as punctures for blood examination or small cuts, when the patient's blood has been deficient in powers of coagulation and bleeding has been persistent or dangerous: As the patient's blood will not coagulate the wounds, it is necessary to apply blood that will do so. The bleeding point is held firmly, exposed and dried, the pressure preventing fresh non-coagulable blood from washing away the coagulable blood after application. The thumb of a person whose blood is normal is pricked in the ordinary way of obtaining a blood film, and the drop of blood obtained is applied directly to the bleeding point. Pressure in the neighborhood of the wound is maintained until the drop of blood coagulates, and may then be relaxed without fear of bleeding. The patient should not rub off the coagulated drop. C. A. LANG.

WHITFIELD, ARTHUR: VACCINE THERAPY IN DISEASES OF THE SKIN. (British Journal of Dermatology and Syphilis, April-June, 1919, p. 79.)

To form a common basis for discussion the author offers the following statement of the present situation of vaccine therapy in skin diseases as being one likely to be very generally accepted. Firstly, it is undoubtedly the fact that some cases have been so favorably influenced by the inoculation treatment that this favorable influence cannot be dismissed lightly as a mere coincidence of the treatment with a spontaneously developing favorable turn in the disease. Secondly, that admitting the previous statement to be true, many cases have shown no such favorable influence, and that while only few may be said to have been definitely aggravated by the treatment, many seem to have been entirely unaltered.

The author summarizes his views on inoculation treatment as follows: (1) In certain diseases, which usually run a short course under what I may call ordinary treatment, the inoculation treatment often achieves brilliant results in the exceptional cases where the disease proves resistant and tends to degenerate into a chronic malady. (2) In most cases of relapsing acute infections of the skin where no constitutional defect and no exposure to local irritants (other than bacteria, of course) can be detected, the inoculation treatment very frequently interrupts and brings to an end the series of relapses. (3) In diseases of clearly chronic course, and especially in those in which the skin undergoes obvious structural change, inoculation has in my hands proved unavailing, though I have carried it on in hospital patients for two years. (4) In dermatoses apparently dependent upon infections of other parts of the body (i.e., the eczematoid eruptions occurring with frequent relapse in patients the subject of intestinal dyspepsia), but not themselves infected in nature, there is some evidence that inoculation treatment of the infected organ aids in restoring to the skin its normal power of resisting adverse external influences.

The author concludes with the repeated warning that inoculation therapy should not absolve the doctor from the necessity of making the most complete examination of the patient. Only when this has shown no other sufficient cause for the skin condition should inoculation be resorted to, and only then can the best results be expected. HUGH CHAPLIN.

GRANGER, AMÈDÉE: THE VALUE OF THE X-RAY DIAGNOSIS OF BONE SYPHILIS. (New Orleans Medical and Surgical Journal, August, 1919, p. 53.)

The writer's article is a very strong argument and plea for the more frequent use of the x-ray as a definite diagnostic measure in bone syphilis. He states that bone and joint syphilis can exist in persons giving a negative personal and family history of syphilis, and not as infrequently as is generally thought in patients giving a negative Wassermann, and even occasionally in patients who are not benefitted by the usual doses of mercury and iodides. but who respond to these drugs when the dosage is pushed to the point of saturation. Clinically, cases of *bone* syphilis resemble Paget's disease, or chronic osteomyelitis, or, when the gumma formation in the soft parts is extensive, osteo-sarcoma. Clinically, cases of *joint* syphilis resemble chronic arthritis, or chronic rheumatoid arthritis, or tubercular arthritis. In 5 cases quoted by the writer, the syphilitic nature of the affections was not suspected in spite of the most careful and thorough diagnostic methods, until x-rays were taken. Vigorous anti-syphilitic therapy markedly improved or cured all of these cases. The writer believes that in correctly made and interpreted x-ray negatives we possess the quickest and most reliable means for accurate diagnosis of chronic and obscure syphilitic bone and joint conditions.
HUGH CHAPLIN.

MARIE, PIERRE: INFANTILE OR SPINAL PARALYSIS. (The Medical Press, October 1, 1919, p. 266.)

The author reviews the history and symptomatology of this disease in children and adults. He presents 5 cases. He calls attention to the remarkable improvement which often takes place in affected groups of muscles, mentioning a case where improvement went on for 6 or 7 years. Regarding late recurrence of symptoms he says, "One point to which I wish to direct your attention is the tendency to a re-awakening of the morbid process after a certain number of years—20, 30 or even 50 years—when, without fever or obvious reason, a limb that was not affected becomes weak. We see fibrillary contractions in this limb and little by little the paresis merges into paralysis. We never know, therefore, whether or not the disease is at an end; for that matter we do not know at all what is taking place. We surmise that when the original attack takes place there are different foci, some of which constitute big lesions and others, on the contrary, do not further develop, though in some the virus may remain active. That the virus does persist is evident by the fact that the blood can be utilized for vaccination purposes many years after. It is supposed that the virus, under certain unspecified conditions, indulges its mischief-making propensities afresh later on."

LOUIS L. SHAPIRO.

LUDLUM, WALTER D.: FEEDING OF CHILDREN AFTER THE FIRST YEAR. (Long Island Medical Journal, October, 1919, p. 345.)

The author recommends well-cooked cereal, as farina or cream of wheat, cooked 2 hours, or hominy or cornmeal cooked 4 hours with milk or formula and very little sugar. He gives vegetables and fruits for "roughage" and mineral salts. Vegetables are cooked, mixed and strained. Fruits allowed are orange juice, prune juice, apple sauce and prune pulp. Minced chicken and scraped beef are recommended in small quantities, cautiously increased. Junket, rice pudding or custard may be given as desserts. Early, after the first birthday, meal hours should approximate those of the adult. Give nothing between meals and nothing whatever casual. Water should be given 2 or 3 times a day. Children should be fed by themselves. The great majority of digestive disturbances in children are the fault of the parents. The most frequent causes are tea, coffee, candy, cake and ice cream soda.

In the sick child, with non-digestive disorders, as diseased tonsils, adenoids, bad teeth or other real defect, results from feeding alone cannot be expected. During the febrile period of infectious diseases give only cereal gruels, zwieback, 1 cupful of broth a day, skim milk and orange juice, away from food. Urge nothing but water, to which sodium bicarbonate may be added. In typhoid, fruit juices, skim milk, cereal, diluted milk and later an average calorie diet have been more successful to the author than a high calorie diet. In scarlet fever, he believes that cereals, fruit juices and early vegetables are better than a milk diet.

LOUIS L. SHAPIRO.

"SCHOOLS ARE PUBLIC, NOT THE CHILDREN." (Editorial, California State Journal of Medicine, October, 1919, p. 362.)

The author deplores this platitude and gives the following figures from the California schools: Of 53,462 children examined in 45 counties, 46.6 per cent had defects, 36 per cent had abnormal tonsils and adenoids, 24.7 per cent were below height or weight of the national scale, 5.5 per cent had defective teeth. In San Diego more than 77 per cent of the children examined between the ages of 1 to 6 years, inclusive, were defective. He calls attention to the value of the protection to the individual in the routine examination of the group.

LOUIS L. SHAPIRO.

FRICK, DONALD J.: THE INTENSIVE TREATMENT OF MENINGOCOCCIC MENINGITIS. (California State Journal of Medicine, October, 1919, p. 379.)

The author thus summarizes:

1. Twenty cases of meningitis are here reported, with a mortality of 15 per cent.
2. Intensive intravenous and intraspinal treatment was used in all cases reported.
3. The 17 cases that recovered were well on discharge and able to do duty.
4. All the cases were of moderate severity. Fifty-five per cent had a petechial eruption; 30 per cent had a positive blood culture and 50 per cent were unconscious on admission.

The following conclusions are drawn:

1. All patients with positive signs and symptoms of meningococcic meningitis should be given both intraspinal and intravenous injections of serum.
2. Intraspinal injections of 30 to 50 c.c. should be given every 8 hours for 6 doses and then at less frequent intervals, as needed.
3. Intravenous injections of 100 c.c. after desensitization should be given every 12 hours for 3 or 4 doses and then every

24 or 48 hours, as indicated by the condition of the patient and by the findings in the blood cultures.

4. Large doses of serum, both intravenously and intraspinally at frequent intervals, can do no harm, and will lower the mortality, prevent serious complications, and shorten the period of convalescence.

5. The withholding of intravenous serum injections until late in the disease, or giving of small doses at long intervals, has no more rational basis than the giving of small doses of 1,000 or 1,500 units of antitoxin in diphtheria or 20 to 30 c.c. of Type I serum in Type I pneumonia at intervals of 24 hours.

6. All of our serious complications, long drawn out cases. ventricular blocking, and high mortality are probably due to too small doses of serum, given at too long intervals.

LOUIS L. SHAPIRO.

FORDYCE, A. DINGWALL: HERPES ZOSTER AND VARICELLA. (Edinburgh Medical Journal, July, 1919, p. 34.)

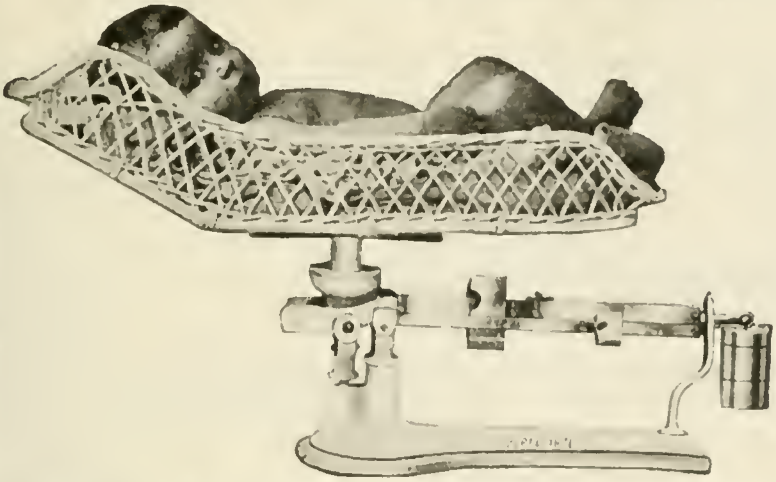
Two boys returned from boarding school for a holiday vacation. One was not well and in two days developed what was accepted as a frank case of herpes zoster of the side of the face extending up into the hair and involving the external auditory canal, although the ear drum was normal. There was considerable pain, general malaise, marked salivation and fever. In 12 days the skin condition was nearly healed. He was still run down in general health, though over his illness. Strangely enough, at this time his younger brother came down with a typical attack of varicella, just 14 days after the older brother first became ill with the supposed herpes zoster. And 3 days later the youngest child, who had not been away to school, also developed a typical varicella. No case of varicella was known of at the school where the two older boys had been. Surely the baby could not have contracted her varicella from the school nor was there time enough for it to have developed from the second youngest boy. Nor was any other source of exposure to varicella known. No definite conclusions are drawn, though a very interesting inferential etiology is left for consideration. HUGH CHAPLIN.

ACHARD, C.: INFLUENZA IN INFANTS. (British Journal of Children's Diseases, April-June, 1919, p. 78.)

One of the peculiarities noted in the influenza epidemic (1918) was the rarity of the disease in infants, and it has been thought that the newborn were immune to it. Achard reports 32 cases below the age of 2 years. In most of the cases the children were admitted in an advanced stage of the disease, on the seventh or eighth day. Those seen at the onset showed restlessness and fever, vomiting or diarrhea, and refusal to take the breast. The prodromal symptoms are followed by coryza, often accompanied by lacrymation. Cough occurred on the third or fourth day. In a few of the cases the disease ran its course in a few days without complications. The temperature rose to about 104° F. Coryza, a slight cough, some digestive disturbances and slight prostration were the only phenomena observed. The chest was negative and recovery was rapid. All the other cases were examples of the thoracic form of influenza. Digestive symptoms were the exception, except at the onset, and were never severe. The fever did not bear any relation to the gravity of the infection. The presence of bronchopneumonia was shown by the dyspnea with recession of the chest wall, dilatation of the alae nasi and cyanosis, leaden color of the face and constant drowsiness. The physical signs consisted of sibilant rhonchi scattered over both sides of the chest in the simple forms, sub-crepitant râles of various sizes, in the forms with capillary bronchitis, and blowing respiration, chiefly on inspiration, in the bronchopneumonic forms. All these signs varied considerably from day to day, and neither their extent nor intensity bore any relation to the gravity of the infection. The bronchial and purely congestive forms all recovered with one exception, their duration being only a few days. The duration of the broncho-pulmonary forms was longer, the course of the disease being interrupted by remissions and relapses. In those cases which recovered, the temperature gradually returned to normal, and convalescence was slow. Cough persisted for several weeks, and in several cases tuberculosis was a sequel. Achard comes to the following conclusions: Influenza in the infant is by no means exceptional. The forms of the disease may differ and the gravity vary. The infant does not possess any real immunity, but is merely less exposed to contagion from without, the infection being chiefly contracted from the mother. C. A. LANG.

AN ACCURATE BABY SCALE AT LAST

ACCURACY FROM THE SMALLEST FRACTION OF AN OUNCE UP TO THE SCALE'S MAXIMUM CAPACITY.



With this in view, the "Perfection" has been made, and so well has it met the test for accuracy that it has been approved by the "Tribune Institute" and the "Good Housekeeping Institute."

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CONTENTS

ORIGINAL COMMUNICATIONS

Re-establishment and Development of Breast Milk.
By C. Ulysses Moore, M.D...... 609

Hyperpigmented as Contradistinguished from Hemorrhagic Measles.
By Henry W. Berg, M.D...... 619

The Influence of Food Upon Development. A Comparative Study of the Feeding of the Young of Man and Other Animals.
By Frank W. van der Bogert, M.D...... 625

Cerebral Versus Lacteal Adiposity. By Frank S. Reuben, M.D....... 636

The Occurrence of Hymenolepis Nana Infestion in an Institute for Children. By Frederick C. Narr, M.D...... 639

Control of Hemorrhage in the New Born.
By Oscar Berghausen, M.D....... 643

Child Welfare Work in Massachusetts.
By Richard M. Smith, M.D...... 646

The Results of Children's Year. By Anna E. Rude, M.D...... 652

Contents continued on page v.

The Reliable Solution to the Safe Milk Problem as it Affects Infants, Nursing Mothers and Convalescents—

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CONTENTS—Continued

SOCIETY REPORT

The New York Academy of Medicine—Section on Pediatrics 669

DEPARTMENT OF ABSTRACTS

Koechert, Herbert L.: Fetal Bronchiectasis 684
The Prevention of Scurvy 684
Dupuy, Homer: Acute Mastoid Antrum Infection in Infants 685
Griffith, J. P. Crozer: Acidosis in Children 685
Pritchard, Eric: The Connection Between Food and Disease in Infants... 687
Wollstein, Martha, and Goldbloom, Alton: Epidemic Influenza in Infants. 688
Hess, Alfred F., and Myers, Victor C.: Carotinemia: A New Clinical Picture 689
Hill, Lewis Webb: Acute Nephritis in Childhood 690
Pastore, R.: Treatment of Chorea According to Marinescu 691

Contents continued on page vii.

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CONTENTS—Continued

Cervone, V.: Treatment of Typhoid With Injections of Colloidal Gold.... 691
Aaron, Charles D.: The Significance of Focal Infections............... 692
Miall, Herbert: The Beginnings of Stammering in Childhood and Youth.. 693

COMMUNICATION

An Appeal for Human Embryological Material........................ 694

ITEMS

Mastoditis in Infants Without Otorrhea 618
Magnesium Sulphate in Treatment of Chorea..................... 635
Acute Occlusion of the Pylorus 638
Calomel Inunctions 642
Autotransplantation of Kidney 645
Anaphylactic Death of Asthmatics 651
Dermoid Cysts 683

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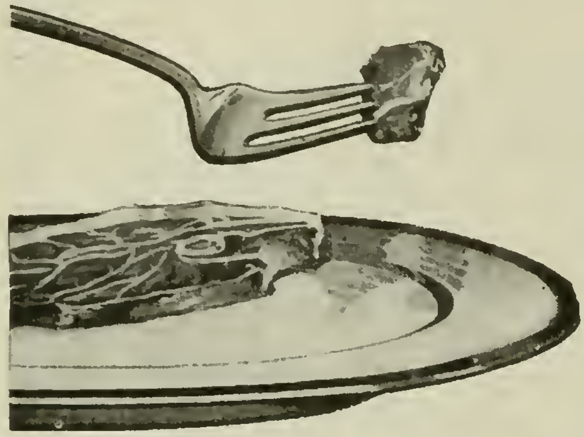

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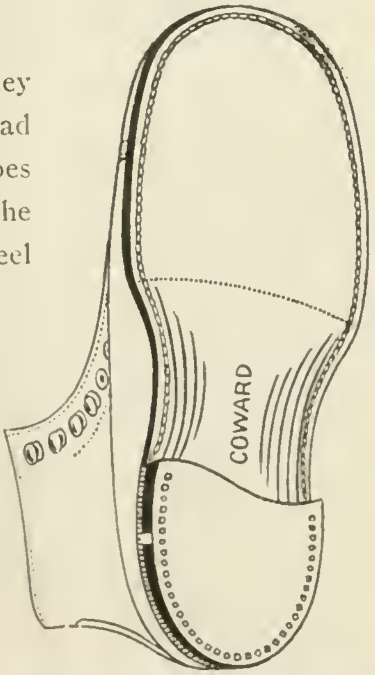

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ORIGINAL COMMUNICATIONS

RE-ESTABLISHMENT AND DEVELOPMENT OF BREAST MILK.*

By C. Ulysses Moore, M.S., M.D.

Portland, Oregon.

For two generations America has had physiology and hygiene taught in the best system of public schools in the world, with results of which we were all proud. The draft law, however, shattered our pride by revealing the fact that one-third of our adult males were physically unfit.

The causes of the imperfections and ill health of adult life are being sought at their source—babyhood. The helpless, innocent, crying infant, the by-product of obstetrics, has become the center of a sociological and medical movement such as the world has never known. The baby is coming into its own. The first and greatest demand which he is making is for the food that God intended, his mother's milk.

---

* Read before the Annual Meeting of the Alumni Association of the University of Oregon Medical School, June 24, 1919.

Breast milk is the only baby food that stands both chemical and biologic tests. It is a living secretion containing all the food requirements of the infant as well as the antibodies to infection. Wassermann has shown that the blood serum of breast-fed babies has stronger bactericidal power than that of those fed from the bottle, which only verifies clinical and statistical data.

Statistics show that the death rate of babies is several times as great among the artificially fed as among the breast fed. Maternal nursing of all infants would, therefore, be a large step forward in decreasing the present mortality.

The disadvantages of artificial feeding are noticeable not only in the death rate among infants, but in their physique and health as they grow older. Bow legs, knock knees, large epiphyses, rosary, and Harrison's groove are readily demonstrable evidence of improper early feeding. The dentists long ago called our attention to the defects of artificially nourished teeth, often more noticeable in the permanent than in the temporary set.

The effect on the muscular tissue is greatest with the smooth muscle fibers, noticeable first in the abdomen. The intestinal walls lose their tone allowing the intestines to dilate and push out the abdominal muscles, the result being the "young robin" belly. Jacobi has shown that the muscular layers of the arteries and veins are also affected, especially in the vascular system of the lungs. This explains the frequent occurrence of lung and intestinal diseases among persons improperly fed in infancy.

How much the brain and nerves are affected must be judged by fretfulness in the baby, nervousness in the older child, and nervous and mental diseases in the adult. King, of London, formerly a neurologist and alienist, studied into the causes of insanity. He found it so much more frequent among people who had been bottle fed in infancy that he gave up his specialty and has devoted his life to a propaganda for breast feeding. "Breast feeding," he says, "will *prevent* more insanity than can be *cured* by all the insane asylums in the world".

The question then comes, is it possible for every mother to nurse her baby? We propose to show that this is possible, admitting only one contraindication to breast feeding—active tuberculosis in the mother. Among the excuses for early weaning of babies, "poor quality" of the mother's milk appears the most frequently. No experiments not subject to criticisms have been published to show that breast milk is ever poor in quality. The trouble, if such there be, is a matter of quantity. Within natural limits a breast secretes milk in proportion to the demand made upon it. A sub-normal demand, weak suction, or insufficient emptying of the breasts, causes a rapid diminution in the amount. Hence with a weak infant additional means must be employed to increase the flow of milk.

Four methods of increasing breast milk have been used: drugs, diet, massage, and expression. Practically every drug in the pharmacopeia has been used for the purpose, each in turn having been discarded. The latest ones are the glandular products with pituitrin leading. Careful physiological experiments show that pituitrin acts upon the smooth muscle fibres, causing them to contract and forcing the milk more rapidly from the breast. The amount of milk excreted in a given time is increased, but again, we are disappointed because the total secreted for 24 hours is unchanged. Morse and Talbot[1] sum up the evidence by saying, "There are no drugs which, whether taken internally or applied externally, can increase the flow of milk to any appreciable extent."

The influence of diet on breast milk has long been a mooted question. Of course the mother must have additional food to make up for the 750 calories lost with the milk and enough water to replace the quart secreted. Hoobler[2], in carefully controlled experiments, has shown that if the mother has a glass of milk per day, one egg or its equivalent in meat, the protein content of her breast milk will be normal. Except among the very poor, therefore, a mother's diet is usually adequate. Probably the most common mistake in practice is to overfeed a nursing woman especially with a milk diet. The idea prevails extensively among the laity that cow's milk poured into the stomach appears again in the mammary gland. Instead it usually fattens the mother and if the breasts have begun to dry up they continue in that course.

The effect of massage on the flow of breast milk has long been recognized. Its most ardent advocate and the one who used it most successfully is E. Truby King of London. He used electrical and manual massage, hot and cold applications followed by suction with a breast pump. He says that when the mother is occupied in this way the psychotherapeutic effect also is of great value.

The fourth method is expression by hand. Soranus of Ephesus A.D. 100 said that emptying the breasts increased their activity. Why manual dexterity in this art has been so long neglected is one of the mysteries of medicine. Pfaundler and Schlossman[3], as late as 1912, give a method as follows: "Manipulation with the hand consists in grasping the part of the breast covered by the areola only. Draw the whole breast downward and forward, cease momentarily, then repeat this maneuver." They then proceed to condemn their own method, by stating that the complete emptying of the milk glands, possible by hand with the cow, is possible with the human breast by no other means than the nursing infant.

De Lee's Obstetrics gives the following method: "Steady the breast with one hand while four fingers of the other wipe the milk toward the nipple." This laborious method requires both hands and is too slow to be practicable.

Sedgwick[4] has given us the first really practical technic: "The breast is grasped about one or two cm. back of the colored areola and a milking motion is carried out toward the nipple." I have to thank Dr. Sedgwick for teaching me this method and for giving me interest and inspiration in the subject. With Sedgwick's method I have had some very gratifying results, due to the fact that some mothers and nurses were able to acquire the tricks of the milking motion themselves.

When I tried to teach manual expression to French and Italian doctors and nurses, I found I needed to make a more careful analysis of the necessary motions involved in the milking process and hence evolved the following formula: First: Place the balls of the thumb and of the forefinger on opposite sides of the nipple just outside the areola, pressing them firmly against the gland itself. Second: Maintaining this pressure, bring the thumb and forefinger together back of the base of the nipple.

This presses the milk out of the sinus lactiferous or ampulla, which forms the beginning of each external milk duct. Third: Give a slight forward pull to empty these external ducts. Stripping or even touching the nipple itself is usually unnecessary. With inverted nipples the ampulla is often 2 cm. dorsal to the external openings of the milk ducts. To compress it the tips of the thumb and finger must be pressed deep into the areolar pit.

As Sedgwick at the University of Minnesota has pioneered in the movement for universal breast feeding; and, as my only claim to originality in the method of increasing the amount of breast milk is an analysis of the milking motions, I feel that simple justice demands that this be called the Minnesota method of manual expression.

The method is so simple that it can be taught to the most ignorant mother or nursemaid. In Milan, Italy, at the time of the opening of our Red Cross Refugee Home of 90 beds, our only nurse was an illiterate Italian without hospital training. We received 2 babies that had been born during "The Great Retreat.' Both had been weaned, one for 8, and the other for 11 weeks. We put both back on the breast and had each mother nurse her baby every 4 hours. The nurse then expressed all remaining milk.

Following each nursing, the baby received the milk expressed at the previous nursing and in addition a complementary feeding from the bottle. The amount given from the bottle varied inversely as the amount procured from the breast. As the babies grew stronger they emptied the breasts more completely, thus stimulating further production, so that in a few weeks the babies were nursing normally to the great surprise of our Italian colleagues.

In Paris, at our Bicêtre dispensary, we taught the fundamental law that *every mother can nurse her baby.* The rule was established that every baby coming to the clinic, who had been weaned 6 weeks or less, was put back on the breast and an attempt made to re-establish the flow of milk.

Abnormal breast feeding cases were classified as follows:

I. Establishment.

- II. Re-Establishment.
- III. Development.
  1. Spastic nipple muscles (hard milkers).
  2. Temporary reduction or loss of milk.
  3. Weak baby.
     - a. Premature.
     - b. Immature.
     - c. Acutely ill, e.g. coryza.

Quoting from my reports of June to September 1918: "We had only 1 case (Lutz) on which to attempt the establishment of a flow of breast milk. The mother had 3 children, none of whom were breast fed. She brought her baby in at 42 days of age, vomiting, and in a bad condition. We taught the mother our method of manual expression and had a nurse call on her as often as our limited forces permitted. To make matters worse the baby steadfastly refused to take the nipple. After 2 months' effort, however, the mother states he is getting 'beaucoup de lait,' at some nursings: the vomiting is cured, and his general condition is good.

"We have had 4 re-establishment cases. One of these, Gilbert, is typical. The baby was weaned at 3 weeks because the mother had to work. Ten days later they came to our clinic, where the baby was put back on the breast and the mother was assured of some financial assistance. After 2 weeks work on the part of the nurse and the mother, the baby was breast fed exclusively. At 3½ months it weighed 6280 grams, having gained 2130 grams in 10 weeks.

"Among the development cases were 6 hard milkers—that is, mothers with circular nipple muscles of abnormal strength. An interesting feature with the hard milkers is that as the amount of milk in the breast increased the spasticity of the nipple muscles decreased and the milk came with greater ease.

"There were 8 premature babies—babies whose strength was naturally below par and who, therefore, needed assistance in their attempt to get milk from the breast. Among these baby Duplot illustrated nicely the rule that babies who are underweight at birth gradually catch up with those who are of normal weight, if properly fed. The baby weighed 1900 grams at birth and during the first 6 weeks gained 1985 grams, thus more than doubling the birth weight in this short time.

"We had 11 cases of temporary reduction or loss of milk. These, when untreated, are the most common causes of weaning. The Leavy baby is an interesting case as showing one cause of temporary loss of milk. At birth the baby weighed 3000 grams. It came to us when 5½ weeks old weighing 3035 grams and was in the third degree (Marfan) of emaciation. It had been fed on the bottle for a week. The mother's breasts were found to be of good size, with large blue veins and normal nipples. The mother claimed that from the eleventh day the baby had been cross and peevish, had failed to gain in weight, and finally had begun to vomit her milk. Investigation showed that the active catharsis, which was given the mother for 3 days preceding her departure from the hospital, had caused a marked reduction in the amount of milk, and this in turn produced an infant too weak to stimulate, again, a normal flow.

"We prescribed our manual post nursing expression and complementary feeding. The baby gained 715 grams in 3 weeks and the mother changed from a tearful, fretful, nervous woman to a happy, smiling one."

The French showed sincere appreciation of the result in our Paris clinic, the mayor bestowing upon us the very high compliment of sending to our clinic his daughter with her 3 weeks old infant.

On my arrival in London, Dr. E. Truby King, who had visited my clinic in Paris, asked me to explain and demonstrate our manual method before a meeting of interested doctors, nurses and laymen. Their enthusiastic interest assured me of their success in this important work. A recent letter from Dr. King stated that he was soon to carry the idea to South Africa, India and Australia.

To show that the method works in Portland as well as in Europe I wish to present 2 cases. One illustrates the development type and the other, re-establishment. The first also shows to what dietetic extremes mothers will go in their endeavor to increase the flow of breast milk. This mother came with the statement that her milk was drying up, that it made the baby vomit, and that a physician had told her that her milk was poor in quality.

The mother gave her daily diet as consisting of 3 regular meals and in addition, 15 pints of milk, 6 or more cups of tea, besides broths, soups and a bottle of beer. Furthermore, she said that she did not like milk and that it made her constipated. The baby was her second child, normal delivery, with a birth weight of 6½ pounds (hospital scales). It had been fed at the breast every 3 hours and for 8 days had received in addition after each nursing 3 ounces of a milk mixture containing three-fifths whole milk. It was brought to me when 18 days old and it then weighed 2 ounces less than at birth.

We assured the mother that her milk was normal in quality and allowed her to stop drinking milk, and to eat a normal, balanced diet. The baby was put to the breast every 4 hours, being weighed before and after each nursing. The mother was taught the manual method of expressing the breast milk and was instructed to do so after each nursing. The results are shown in Table I.

TABLE I.—DEVELOPMENT OF BREAST MILK.

Case 638A

Date	Age	Weight	Milk Secreted.								
1919	Days	Grams								Amount Ounces	Total In 24 hours Ounces
			Hours	6	10	2	6	10	8		
May 17	21	2845	By child. Ozs. ..	1	1	1	1	1½	2	7½	17¾
			By hand. Ozs. ..	1	2	1½	2¼	1½	2	10¼	
June 20	55	4710	By child. Ozs. ..	5	4½	3½	3	4		20	38
			By hand. Ozs. ..	7½	3½	3	2	2		18	

You will notice that on weighing the baby before and after feeding it was found to be getting only 7½ ounces from the breast in 24 hours. That the baby was fretful and lost weight and that those in charge considered the milk to be of a poor quality was, therefore, to be expected. The baby being small and weak did not take a sufficient amount for its needs and it left in the breasts a residuum of 10¼ ounces. This the mother expressed by hand and used in complementary feedings.

Thirty-four days later the baby had increased 65 per cent in weight and the amount of milk which he obtained from the breast had increased 266 per cent. The mother began giving a pint of breast milk to charity cases and bemoaned the fact that she did not have twins.

The re-establishment case is a doctor's second child. Their first baby was breast fed only 15 minutes or so; they didn't expect the mother would be able to nurse this one. After 2 weeks of unsuccessful effort they put the baby on goat's milk. It weighed 6 pounds 12 ounces at birth and only 6 pounds 7 ounces at 5 weeks when I first saw it. Besides losing weight it was vomiting frequently and cried day and night.

I explained to them the necessity of having breast milk for the baby and assured them that if the mother would do her part, the milk would return even though the baby had been weaned for 3 weeks. The results are shown in Table II.

TABLE II.—RE-ESTABLISHMENT OF BREAST MILK.

Case 637B Date 1919	Age Weeks	Weight Pounds	Breast Milk in 24 Hours Ounces
Jan. 27	5	6 7/16	0
Feb. 12	7	6 6/16	6¼
Feb. 20	8	6 8/16	9¾
March 1	9	7 3/16	15½
March 11	11	7 13/16	20¼
March 25	13	8 12/16	21½
April 8	15	9 7/16	27
April 30	18	10 11/16	30½

In 3 months time the breast secretion increased from nothing to almost a quart a day. The father says that this baby is better natured and more intelligent than the first baby was at the same age, while its physical condition is better beyond comparison.

SUMMARY.

1. Lack of breast milk in infancy causes many of the imperfections of adult life and is manifest in the bony, muscular, and nervous tissues.

2. Breast milk is the only infant food which stands both chemical and biologic tests.

3. When breast milk is thought to disagree the trouble is a matter of quantity, not quality.

4. Attempts at increasing the flow of breast milk have been made by using drugs, diets, massage, and manual expression. The last is giving success.

5. A careful analysis of the technic of manual expression shows it to consist of three distinct yet simple movements.

6. A classification of cases with insufficient flow of breast milk is given.

7. That this method of expressing breast milk gives satisfactory results and that every mother can nurse her baby is shown by experience in France, Italy, England, and Portland, Oregon.

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MASTOIDITIS IN INFANTS WITHOUT OTORRHEA. (Revista Medica del Rosario, March, 1919). Steinsleger has had to operate for mastoiditis in 9 cases in young infants and there was no otorrhea in 77 per cent in this group. One infant was only 45 days old, and the otitic origin of the mastoiditis was rendered evident by perforation of the mastoid on the seventh day of the abscess. In two cases an incision had to be supplemented later with the radical operation before a cure was realized. Mastoiditis in young infants seems to be relatively benign, and the child seems to bear it remarkably well. But this does not justify halfway measures; the results of such are deplorable. He never encountered any remote complications in young infants such as he has witnessed in older children. In the infants there was always caries of the mastoid process, and the operation was thus facilitated. Physicians should be on the alert to detect otitis in infants as it is much more frequent than generally imagined.—*Journal A. M. A.*

HYPERPIGMENTED AS CONTRADISTINGUISHED FROM HEMORRHAGIC MEASLES.*

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True hemorrhagic measles is an extremely fatal disease. Those who see measles cases in large numbers have learned to attach a very serious prognosis to hemorrhagic cases of this disease. A great many experts in communicable diseases consider true hemorrhagic cases of these diseases uniformly fatal. Others believe that some exceptional cases may recover. Many years ago I was impressed with the fact that the cases of measles with a hemorrhagic skin eruption, that recovered, were not clinically very sick cases during the whole course of the affection, while cases with the hemorrhagic skin eruption showed the manifestations of severe illness and finally died were from their beginning entirely different in type from those that recovered. The temperature was very high or subnormal, the pulse was very rapid; there were hemorrhages from the nose, eyes and other mucous membranes including those of the stomach and bowels; there was hematuria; there were toxic cerebral symptoms, the patient lay semi-comatose or in stupor, albumen was frequently present and the patient died within a few hours or a few days, preceded by stupor or coma.

It was a curious fact that in these malignant cases most of the eruption is not hemorrhagic but disappears during pressure as does the eruption in ordinary measles. The eruption is frequently only slightly developed and is accompanied by petechial spots and sometimes more or less extensive purpuric areas—such eruptions as those of these latter cases indicate true hemorrhagic measles and were followed by an inevitably fatal result. But there are cases in which the eruption is a perfectly normal eruption more or less extensive, accompanied by a lesser degree of hemorrhages into the mucous membranes and a lesser degree of cerebral and general toxemia. Yet even in these cases the experienced clinician will learn that it is proper to predict that a fatal result will occur generally with the preceding occurrence of a complicating bronchopneumonia, nephritis or other serious complications to which cases of measles are liable, for these also are cases of non-fulminating yet true hemorrhagic measles.

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* Read before the Section on Pediatrics, New York Academy of Medicine, October 9, 1919.

The cases that I wish here to call special attention to, are cases in which the eruption as a whole is "hemorrhagic," that is to say, it does not disappear during pressure, but on the contrary becomes more brilliant during pressure. This is true not only in spots, but over whole extremities and large areas of eruption or even over the whole surface of the skin eruption. The eruption looks as though it were painted with fixed dyes underneath the epidermis. It is slightly elevated and is apt to be confluent. The more the skin is pressed the more brilliant the eruption becomes. This type of case I have termed pseudo-hemorrhagic or hyperpigmented measles. The exanthema in these cases is never of the miliary type. The papules are large and irregular in shape; generally the eruption is plentiful and frequently confluent.

The hyperpigmented character of the eruption is rarely marked on the first day but generally observed on the second and third day by the failure to pale and almost disappears on pressure as happens in ordinary measles. The hyperpigmented eruption is much more brilliantly red than ordinary measles; the papules are more elevated, and the macular portion of the eruption is almost as red as the papule. The eruption endures its full brilliant color up to the seventh or eighth day before it begins to fade during all of which time it retains the characteristics of not fading on pressure.

While in ordinary measles the papules fade after the fifth day, leaving a slight pigmentation at the site of the papules which does not entirely disappear until desquamation is complete, in hyperpigmented measles the maculo-papular pigmentation begins to fade about 3 days later and even then the pigmentation is much more marked than in ordinary measles and persists until several days or even weeks after desquamation is complete. In hyperpigmented measles too, the desquamative stage is delayed, and when it begins the furfur is coarser with larger scales than those of ordinary measles.

There are cases in which the whole eruption is of the hyperpigmented type. In other cases only a portion of the eruption is hyperpigmented while the rest of the body is covered by ordinary measles. The enanthematic portion of the eruption, particularly on the soft palate, is more marked and clearly defined than in an ordinary case of measles. But in these cases in contradistinction from true hemorrhagic measles there is no petechial or purpuric patches present either on the skin or mucous membranes. There are no extravasations of blood under the skin or mucous membranes, as in hemorrhagic measles, nor are there hemorrhages from the nares, throat, mouth, conjunctiva, stomach or bowels, etc., as in hemorrhagic measles. Koplik spots are present about as early and to the same extent in hyperpigmented as in normal measles.

As I have stated above, desquamation occurs in areas covered by hyperpigmented measles about 2 or 3 days later than in ordinary measles, beginning about the 14th to the 16th day and continuing until complete. In cases in which there is a mixture of hyperpigmented and normal measles, the areas covered by the normal eruption desquamate sooner than the hyperpigmented areas. Faint pigmentation persists for a considerable period after desquamation is complete, and the desquamation of the hyperpigmented areas is, as stated above, coarser than in normal measles. The urine shows no Diazo reaction.

The essential pulse and temperature curves, characteristic of measles, are present in cases of hyperpigmented measles but are as a rule on a higher scale than in cases of ordinary measles; while the ordinary cases vary from almost afebrile to very high temperatures, the hyperpigmented cases are always cases with high temperature curves and correspondingly high pulse rate. But there is an important point of difference between these cases and the true hemorrhagic cases in this respect and that is that hyperpigmented cases never present a subnormal temperature curve, while true hemorrhagic cases in collapse do. In these cases such a subnormal temperature curve is accompanied by an extremely rapid, sometimes not countable and thready pulse. The fastigium stage of the temperature curve in the hyperpigmented cases is fully 2 or even more days longer than in ordinary measles. The resolution of the temperature curve by crisis, so characteristic of normal measles, occurs in hyperpigmented cases too, but generally 2 or more days later than in ordinary measles.

In hyperpigmented cases the pulse varies with the height of the temperature and is generally, even if rapid, of excellent quality and force. Myocarditis and arrythmias are not present in uncomplicated cases of hyperpigmented measles. The cardiac percussion area is not enlarged and there are no other signs of cardiac dilatation. Cases however in which complicating diphtheria is present will show over-rapid pulse and arrythmia, with other signs of diphtheritic myocarditis.

I have seen some of those, although I believe this complication is not as frequent in hyperpigmented as in ordinary measles cases. Bronchopneumonia occurs as a complication in hyperpigmented measles, but not as frequently as in ordinary measles. The prognosis for recovery of such a complicating bronchopneumonia in hyperpigmented cases is very much better than in the bronchopneumonia complicating ordinary measles. Indeed the general prognosis of hyperpigmented measles not only as to recovery, but as to the infrequency of serious complications is very much better than in ordinary measles of the same grade of severity. Serious complications due to the extension of the inflammatory processes upon the mucous membranes or to septic manifestations disseminated through the blood and lymph channels are exceptional.

It would almost seem that the hyperpigmented eruption is a measure of the strength of the specific measles virus in the case, and that here the measles virus is the stronger element in the symbiotic combination of activity of the measles virus and pus organisms which are the genetic factors in the clinical picture of measles with septic complications. The clinical history of simple uncomplicated measles entitles us to believe that the measles virus *per se* is not a very toxic one and that the high death rate in complicated cases is due to the effects of increased virulence of the complicating organisms when combined with the measles virus.

This is demonstrated by the fact that a complicating diphtheria in a case of measles requires the administration of three times the dose of antitoxin sufficient therapeutically for a similar case of simple diphtheria. In hyperpigmented cases, it would seem that the specific measles virus is so much stronger than in ordinary measles, that it predominates in any mixed infections occurring in such hyperpigmented cases, and while in such cases the general severity of the measles symptoms is greater, the severity of the complication upon which the prognosis of measles depends is very much diminished. It is important clinically to remember that in hyperpigmented measles the extravasation of the red blood corpuscles and blood serum to which I shall presently refer is limited to the exact site and configuration of that portion of the eruption that is hyperpigmented, and is never accompanied by hemorrhages appearing as petechial or purpuric spots distinct and apart from the eruption.

The histological alterations found in the skin structures of patients dead from measles are very slight due to the fact that most of these changes are circulatory disturbances characteristic of inflammation of the minute structures of the skin which do not persist after death.

Simon examined minute sections of skin cut out during life at the height of the measles eruption. He found the sebaceous glands, and the epidermis and corium unchanged, although Hebra and Mayr had described the sebaceous follicles the seat of inflammation and swelling. Simon and also J. Neumann found inflammatory edema of the corium. Between the capillaries of the corium minute granular bodies appeared, which were not soluble in acetic acid. Most important, however, from the standpoint of explaining the pathology of hyperpigmented cases of measles is the fact that in normal measles Neumann* described dilatation of the capillaries of the corium, extravasation from these of the whole blood corpuscles which adhere to the outer surface of the capillaries of the sebaceous glands and hair follicles, and between the unstriped muscle fibres in the corium. In normal measles the white blood corpuscles and serum are extravasated into the morbiliform lesion. In hyperpigmented measles resulting from a more active measles virus, it seems proper to assume, that the inflammatory process is much more active and there is a transmigration not only of the white corpuscles but also of the red blood cells resulting in the hemorrhagic pigmentation of the lesion, the hemoglobin being rapidly changed to hemosiderin under the action of the living tissue cells.

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* J. Neumann, Ctrlbl. fr. Klin. Med. June 16, 1888, page 435.

That red blood cells are extravasated to a very minute extent even in ordinary measles is highly probable when we remember that a slight degree of brownish pigmentation is present in the ordinary measles after the eruption has begun to fade and persists until desquamation is complete.

Other acute eruptive diseases in which the visible eruption is the expression of acute inflammatory changes in the skin capillaries also show a pseudo-hemorrhagic type of the eruption. Thus a pseudo-hemorrhagic scarlatina occurs, more rarely it is true than hyperpigmented measles, and during the great epidemic of smallpox in 1901-2 I saw not very exceptionally pseudo-hemorrhagic smallpox. It is sufficient to say here that in none of these is the clinical character of the case or its prognosis any worse, on account of the pseudo-hemorrhagic character of the skin lesion.

I have thus called attention in some detail, perhaps, to the characteristics which distinguish this condition, under the name "hyperpigmented" rather than as pseudo-hemorrhagic measles, because the configuration of the essential lesion is, either in part or over the whole area of the eruption, in fact, truly hemorrhagic. This hemorrhagic character, however, is only a local skin manifestation due to the severity of the inflammatory process that affects the histological cutaneous elements involved in the measles eruption. The term pseudo-hemorrhagic therefore would be a misnomer, although it would have the merit of distinguishing these cases from the truly hemorrhagic cases of measles in which the hemorrhagic feature however is only one visible manifestation of severe general constitutional toxemia resulting almost uniformly in death.

The term hyperpigmented measles while open to the criticism that it is descriptive of only the second stage of the hemorrhagic lesion, as such, nevertheless sufficiently contra-distinguishes these cases clinically, and from the prognostic standpoint, from true hemorrhagic measles. I may be permitted again to emphasize the fact that the prognosis of hyperpigmented measles is an extremely favorable one.

10 East 73rd Street.

THE INFLUENCE OF FOOD UPON DEVELOPMENT.

A COMPARATIVE STUDY OF THE FEEDING OF THE YOUNG OF MAN AND OTHER ANIMALS.*

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A new sub-specialty of medicine is being developed under the name of Social Preventive Pediatrics, a by-product of the war coming out of a realization of the seriousness of the enormous number of physical defects brought to light by the examinations of the Draft Boards. This was demonstrated previously, though not so forcefully, perhaps, by medical school inspection. This department of pediatrics has for its ultimate object the physical and mental improvement of the child and eventually of the race.

There can be no denying the fact that there are too many surgical conditions in our hospitals today, too many appendectomies, too many tonsillectomies, too many adenoids, too many hernias; that chronic and irreparable conditions of heart, kidneys, eyes, ears and teeth are far too frequent; that there are too many nervous disorders. This is not a reproach to the surgeon or to the internist into whose hands they fall. When these conditions exist they must, if possible, be remedied; it is more justly a reproach to the general practitioner and to the pediatrist by whom a goodly proportion of the defects might have been prevented.

Man's present physical condition is unquestionably a result of civilization. Frederick S. Dellenbaugh in his "North Americans of Yesterday" tells us that deformity among the Americans was rare, there were seldom cases of diseased spine, blindness, insanity, squinting eyes, deafness, or any deficiency or excess of the organs. Contact, however, with civilization, he says, has changed the average health in many if not all tribes.

To suggest that diet is the sole or all-important factor in the prevention of disease would be to court criticism as a faddist, but an experience of nearly 20 years in medicine, 10 of which have been limited absolutely to the treatment of children, has convinced me most firmly that rational feeding in infancy and childhood has a real bearing upon the development of physical and mental strength and of resistance to infection.

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* Read before the Amsterdam City Medical Society, October 28, 1919.

The food of the old Romans was simple; their chief dish, coarse flour boiled with water, their meat principally pork, with vegetables, fruits, cakes of wheat, or barley and milk; and upon this frugal fare they were able to develop a strong physical manhood. Under the early Empire they were not satisfied with the simple meals of their ancestors and vied with one another in obtaining the rarest delicacies. Fortunes were spent upon single feasts and gluttony was reduced to what was supposed to be a fine art.

Morey, who is authority for the above statement, says that the Greeks at their meals were noted for their moderation. They evidently knew that gluttony was not conducive to good health and to that physical perfection which they prized so highly.

The experience of the aborigines of Tasmania, when transferred to the Flinders Island Settlement, shows very tragically the effect upon health of a more rapid radical change in diet and environment. Foods to which they were unaccustomed, obtained without physical effort, did much to determine their extermination. These people in their natural state might have been looked upon as gluttons. Roth says that they had very great appetites, and quotes Davis as saying that they were a long time without food and then ate in large quantities, but they had but one meal a day and the obtaining of this meal required an enormous amount of physical exertion. The natives of Van Diemen's Land are described by many as possessing on the whole a well-proportioned frame.

Charles Darwin, writing of animals and plants under domestication, says that of all the causes which induce variability, excess of food, whether or not changed in nature, is probably the most powerful. Again speaking of the effect of food upon the digestive organs he instances the pig in which animal the nature of the food supplied during many generations has apparently affected the length of the intestine, and quotes Cuvier, who gives their length to the body in the wild boar as 9 to 1, in the common domestic boar, 13½ to 1, and in the Siam breed as 16 to 1. He also says that abundant food given during many generations directly affects the size of the breed.

Bees when fed upon certain food develop into workers; when otherwise fed, they become queens.

Mitchell in his "The Childhood of Animals" speaks of the influence of the nature of the food in retarding or accelerating the pace at which the different tissues and cells of the individual body grow.

The breeders of domestic animals or of wild animals in captivity realize the importance of diet in the development of these animals and we must not forget that civilized man is a domesticated animal and that the young of man must be looked upon as a young animal in captivity, dependent as he is upon his guardian as completely as is the lion cub, or the lamb, upon his keeper.

Primeval man depended for his sustenance mainly upon hunting and other forms of active exercise. It is safe, therefore, to assume that he ate no more than he actually required, and that what he consumed was, because of his active outdoor life, digested, assimilated and oxidized. His appetite, stimulated by natural means, was, undoubtedly, a normal one and a true index of his body needs. Over-consumption of foods was not encouraged by diverse and tempting methods of preparation, nor by the addition of condiments and appeals to the senses. He ate because he was actually hungry, because nutriment was needed for the development of new tissues and for the repair of parts depleted by physical exercise. He did not eat simply because he was tempted by palatable dishes and urged by solicitous relatives and friends.

In the course of time, and under the stress of civilization, man's occupation changed. The likelihood of obtaining food depended more and more upon the brain and less upon the muscle. His life became a sedentary one so that the muscular exercise which justified his original feeding habits became less a part of his existence. His food under the new conditions of living could not be so completely oxidized and, therefore, in order to protect the organism from the dangers of absorption of the products resulting from the fermentation and putrefaction of food not properly utilized by the digestive tract, one of two courses must be followed: either the individual must exercise more or eat less.

It is difficult or impossible under present conditions of civilization to pursue the first course. We must, therefore, advocate the adjustment of food to the requirements and ability to utilize and in the case of the child this adjustment must be left to us as his guardians.

Adults unfortunately must be left to a certain extent to work out their own salvation. We, as physicians, can but advise and suggest. The perfection of the race must depend entirely upon the care and judgment exercised in the rearing of its young. The position of the child must be appreciated. His dependence upon his parents or guardians, as the domesticated animal depends upon his master, must be realized. In endeavoring to determine his food requirements we must look upon him as a young productive animal comparable to the animals domesticated by man. Originally the offspring of parents who depended for their livelihood upon muscular activity, he was taught early in life to trap his meat and collect his vegetables and fruits—his appetite was stimulated by muscular exercise, his food was oxidized and converted by muscular work. Gradually the time when he must fight for himself has been deferred, his food is laid before him, his appetite is no longer stimulated by natural means but by artificial methods, condiments, sweets, tempting methods of cooking, appeals to taste, and these at a time when there is often more fuel in the furnace than can be consumed. Originally appetite could be depended upon, when man did physical work for his living. Desire for food indicated a need of food; under present living conditions inability to assimilate may produce tissue hunger in the overfed. Sedentary, inactive lives predispose to imperfect oxidation, improper function of digestive organs and at last inability to utilize food needed for body development, tissue hunger ensues and attempts to satisfy lead to further digestive disability. Products of faulty metabolism, decomposition and fermentation, unquestionably, are responsible for both the functional disorders and organic lesions noted in after years.

Leonard Williams says of the responsibility of the digestive tract that constipation—a sure result, in most instances of improper feeding—vies with syphilis and alcohol in the multiplicity of its morbid consequences and their magnitude. He reminds us that adolescent insanities in girls often begin with constipation, anemia and amenorrhea.

The attitude toward rational feeding seems with most people to be that exemplified by a little picture of a very fat boy given me by one of my patients, under which is the legend "We live but once—to h—— with the diet," yet the Japanese have an adage—"If you love your children give them plenty of spankings; if you hate them, given them plenty to eat."

We feed a horse a definite number of quarts of oats 3 times a day with absolute regularity; our valuable dogs are fed with the utmost care. When we feed these or any other animals in any other way we expect them to sicken and die. Yet we give our children to eat what they want when they want it and expect them to remain well and to develop normally. The wild animal and the wild man are most quickly destroyed because the change is more radical; the domesticated races of animals and man, because of a wider limit of tolerance and a certain immunization, degenerate more slowly.

I have known a friend who was greatly incensed when his dog was fed off schedule, to call his young son downstairs many times, after he had gone up for the night, to taste some delicacy from his dinner table.

No zoological garden is safe without the sign "Don't feed the animals," yet it is common practice to feed other people's children.

One of my patients, a small boy under treatment for a digestive disorder, begged his father, when calling in the country, not to let the women give him anything to eat.

Mitchell says, in his most interesting book upon "The Childhood of Animals," from which I have already quoted, "there is nothing more important in the feeding of all animals, young or old, than not to put fresh food into the stomach until it has passed the last meal into the intestines and still better until it has had a rest after being emptied; and Dr. Hornaday warns against feeding peanuts, candy, etc., to animals in captivity and suggests that, if you wish to kill any of them, a gun is far more respectable and also more merciful.

If we are willing to accept the results of animal experimentation in other branches of medical science, we cannot refuse to consider them in relation to diet.

It has been said that child welfare work should begin with the grandmother. The dietetic management should begin with the mother. Many a child's unfair start in life may be attributed to the diet of its mother. It is common practice to deprive the nursing mother of foods which supposedly have had a bad effect upon the milk, on the one hand, and to force the feeding in the hope of improving the supply, on the other, to a point where the digestive organs revolt, with the consequence that the secretion of milk, which depends entirely upon food assimilated for its production, ceases or is chemically changed in composition.

I was once called to see a nursing woman who had been advised to eat nothing but potatoes and was later told not to eat potatoes; and again was consulted because there was no milk and found that a diligent nurse had fed the woman every 2 hours. These old-fashioned beliefs and pernicious teachings should be discouraged and an effort made to insure more normal living. Much can be done for the physical development of adolescent women before the child-bearing period. It is difficult to understand how the young woman fed at the soda fountain can hope to successfully nourish herself and her baby.

It seems hardly necessary to discuss the importance of breast feeding, yet, despite all the pleas that have been made for its more general practice, physicians and nurses, as well as the laity. are still responsible for unjustifiable advice as to its discontinuance. Some of the reasons given me have been absurd, not to say almost criminal. Knowing as we do to what a great extent successful nursing influences infant mortality and morbidity, at least a conscientious attempt to improve the supply should be made.

The length of the nursing period undoubtedly has an effect upon future development. Apes, according to Garner, have their full set of milk teeth at 2 or 3 months of age; they are weaned at 5 to 7 months. The dental formula of the ape is the same as that of the human, and the process of dentition is identical. Primitive races of man nurse their babies as long as 3 years apparently until after first dentition is accomplished. We have all seen pictures of babies standing at the breast and I have been told by my friend, Dr. Swart, who spent some years as a medical missionary in Siam, that he has actually seen a child take a cigarette from his mouth, place it behind his ear, suck the mother's breast and return the cigarette to his mouth. But we must remember that these are wild animals and primitive peoples in their natural state, that because of natural conditions they are able to produce a better milk supply for a longer time, and that they have not the means of rendering other foods available to the incompletely developed digestive tract as have educated peoples.

Experience seems to show that the present-day civilized woman cannot produce a satisfactory milk for longer than 1 year. Babies kept longer at the breast usually develop less well and do better where other foods, properly prepared and administered, are given. Possibly generations of early weaning have accustomed the digestive organs to the severer test.

Physical defects and digestive disorders are frequent in the later life of children who give a history of having been long at the breast. The real danger of prolonged nursing lies in the likelihood of overfeeding, since it practically always means breast milk in addition to other foods and much of the nursing is practiced at night when the digestive organs are entitled to rest.

Young carnivora remain with the mother for a period of a few weeks to even more than a year. Before they are weaned they begin to scrape off fragments of flesh from the prey that the mother has brought home, and so gradually acquire a taste for their future food and an ability to digest it. Young camels begin to eat in a few weeks, but suckle for nearly a year.

This argues for gradual weaning, a gradual accustoming of the digestive organs to their future task, the early administering of green vegetable juices, fruit juice, and beef juice.

Artificial feeding during infancy cannot be discussed here in detail. Suffice it to suggest that more thought for the future should be exercised in its practice.

Spectacular gains often lead to future losses. Carbohydrate excesses may temporarily satisfy the mother but end in disease and deformity. Overfeeding in artificially fed infants is exceedingly common and cannot but permanently affect the digestive organs.

Experiments in one of the London dispensaries some years ago showed that nursing infants of the poorer class did fairly well when obtaining 15 to 18 ounces of breast milk daily; 42 ounces is not an unusual daily amount of artificial food. If our mixture is anywhere nearly correct in its composition such large quantities must be unnecessary, and if unnecessary, harmful. The enormous bowel movements of cases thus fed confirm the suspicion. Food, properly adjusted to body needs, should give little residue—exhibited in small stools. Lengthening of the feeding interval from 3 to 4 hours on the same mixture, ensuring a smaller amount being given in the 24 hours and allowing more time for digestion, gives a pretty demonstration of the correctness of this theory.

Prolonged bottle feeding, probably because of prolonged infantile conditions, frequently prevents development. Animals kept for a long time on liquid foods fail to do well and improve rapidly when a more general diet, requiring more digestive effort is carefully substituted. The same effect is frequently demonstrated in pediatrics. This brings us to the question of milk as a food in later childhood. I personally feel that owing to so much being said in child welfare literature about the value of milk as a food, too much of it is being given to the exclusion of other foods, or in addition to other foods, encouraging the most pernicious of all feeding habits, between meals feeding. Milk was made for the nursing baby, no animal in its wild state obtains milk after its nursing period. Milk is a food prepared by nature for the undeveloped alimentary tract and in later years development must be normally stimulated. Small quantities of milk taken with the meals are probably beneficial; large quantities, I believe, are deleterious. Milk is not a necessity in the diet of the older child—vitamines are supplied elsewhere.

Within the past year or two, malnutrition in later childhood has caused much anxiety. There seems to be a little misconception as to the causes of this condition which is unquestionably responsible for many of the physical defects of later life. Malnutrition is, I feel safe in saying, not due, in the majority of cases, to an inability to obtain food. It is due far more often to ignorance as to the proper methods of administering. As suggested by Leonard Williams, inasmuch as food is agreeable it is safe to assume that such dietetic errors as are habitually committed arise from excess rather than deficiency of its consumption.

There are too many people "trying to raise St. Bernard pups out of greyhounds." The old adage that "it makes him thin to carry it around" is not a joke. If the same care were exercised in feeding our children that is exercised in the feeding of our domestic animals and pets, few would be ill, deformed or chronic invalids.

Older children, to develop normally, must have digestive rest. At 18 months, I put them on 3 meals. The interval between meals should be long enough to insure time for digestion and a period of rest after digestion is accomplished. This holds true of infants as well; 3 hours in the early months; 4 hours after 6 months with longer periods at night. Few babies require food after 10 P.M. when 6 months old, nor after 6 P.M. when 7 or 8 months. I believe that orange juice, when given to infants, should be administered as part of a feeding, not between as an extra meal. Nothing requiring digestion should be given in the water they take.

In determining the amount of food necessary at a meal, common sense and experience are better guides than mathematics, but definite amounts should be given, increased or decreased as judgment and results dictate. The diet must be a mixed one. Proteid to repair tissue, fats and carbohydrates for heat, green vegetables for salts, iron and the establishment of normal peristalsis. Man from earliest times has been a meat eater. He cannot dispose to good advantage of the large amounts of meat consumed when his life was a more active one but small quantities are still of value. He is now physiologically unable to deal with any sort of food as he was in the past and probably this is particularly true of animal food, but I believe that meat excesses are exceedingly rare in childhood and that the fear of meat in the diet of children has led to a bad dietetic balance. because of the belief in bread as the "staff of life" and the feeling that too much cereal and bread cannot be eaten, and because of the ease in obtaining and preparing these foods, carbohydrate excess is exceedingly common. Carbohydrates are eaten because they are cheap and pleasant to the taste, in large quantities, and their use must therefore be controlled.

Breadstuffs and sweets are frequently eaten between meals and probably have been for many generations, but the temptation in the time of our own childhood and that of parents, was not so great; there were not ice-cream saloons on every corner and candy in every drug store. Sweet consumption is comparable to that of alcohol as is evidenced by the increase in the consumption of sugar since the prohibition of alcohol. The American people consumed in the first 9 months of this year 300,000 tons more sugar than normally. It is common experience of those accustomed to the so-called "course dinner" to be dissatisfied with a meal however large unless ending with dessert. Children should not be tempted to eat other foods by the promise of sweets, neither should foods be sweetened in an attempt to induce the child to eat them; this is a common practice in the case of eggs, which will be taken if prepared as an egg-nog when otherwise refused.

One who is actually in need of food will eat anything edible. Dillon Wallace in Labrador chewed his moccasins. Food that is not relished is not digested. Create the appetite first by forced abstinence; then the menu need not be elaborate.

Variety is often urged as a necessity. Horses live and thrive on oats and hay for practically their whole lifetime. There is a people in the South Sea Islands who live continuously on a single food. Variety is of advantage but not essential.

Green vegetables stimulate peristalsis, aid in the accomplishment of a balanced ration and supply, no doubt, the vitamines essential to well-being. I am told by Mr. Langdon Gibson, who was with Peary on one of his expeditions, that the Esquimaux, whose diet is of necessity principally meat, obtain vegetable food by opening the stomachs of the reindeer which they kill.

These foods should be given with absolute regularity, nothing but water between. Of all the rules of rational feeding, this is perhaps the most important, with mastication often interfered with by the hurried meals necessitated by school hours a close second. State statistics show better nutrition in orphan asylums than outside, apparently due to regularity of meals and elimination of between meals eating.

To summarize, my suggestions as to the dietetic management of the child with the object of determining a good physical and mental development and a resistance to infections would be:

1. Encouragement of moderate and wholesome dietetic habits in women approaching the child-bearing age.
2. Common sense control of the diet of the nursing mother.
3. Encouragement of breast feeding.
4. Gradual weaning and the avoidance of prolonged nursing and bottle feeding.
5. Long feeding intervals to ensure proper digestion and assimilation.
6. The elimination of between meals eating and of over-feeding at meals.
7. Avoidance of excess of any individual class of foodstuff. ensuring thereby a mixed and balanced ration.
8. Plenty of time for mastication without encroachment upon the feeding interval.

Such a course is practicable. People are in a receptive mood. All of us have patients who employ us to keep them well. That intemperance in the diet of adults is responsible for many organic lesions is accepted. My plea is to give to the growing child those advantages which have been proven to be of the greatest importance in the development of the young of other animals.

111 Union Street.

MAGNESIUM SULPHATE IN TREATMENT OF CHOREA. (Policlinico, Rome, April 6, 1919). Cavalieri reports gratifying success from subcutaneous and intramuscular injections of a 25 per cent solution of magnesium sulphate in a case of extremely severe chorea in a boy of 13. The first symptoms had been noted 12 days before. The solution was made with 4 gm. of magnesium sulphate in 16 gm. distilled water, the dose of 2 c.c. was injected 2 or 3 times in the course of the 24 hours. The total amount of the drug thus given daily was 1 gm. in this case, and the child was able to sleep at night. The excitement and restlessness had prevented sleep before, and the boy had had to be tied to prevent serious injury from his spasmodic jerkings. By the end of the month he was able to feed himself, and was quite restored in 6 weeks although left with mitral insufficiency. The magnesium injections were kept up for 12 days.—*Journal A. M. A.*

CEREBRAL VERSUS LACTEAL ADIPOSITY.

By Mark S. Reuben, M.D.,
New York.

Baby Z. age 10 months, was brought to the Vanderbilt Clinic on account of marked adiposity. The infant was the first born; birth rather difficult; no instruments used; breast fed to date. The mother had been nursing the infant irregularly—every time the infant cried. In the first few months, there was a history of vomiting immediately and sometimes after nursing; the bowels were and are regular.

Physical examination reveals a very fat child; the head measures 17⅛ inches; the chest, 24¾ inches; the abdomen, 25 inches; the length, 29½ inches; mid-thigh, 15¾ inches; and mid-leg, 10½ inches. The anterior fontanelle is closed; 2 lower median incisors are present. Supported head without aid at 3½ months; at 8 months could sit up without support. The child knows its mother, plays with toys, follows a light and watch in all directions. The head is somewhat small, and the anterior fontanelle has closed rather early; no other abnormality of head is present. There is no spasticity nor flaccidity of any muscles. The infant has perfect control of its extremities; reflexes are not exaggerated. Slight umbilical hernia is present.

The Wassermann of the mother is negative. A complete x-ray study of infant presents nothing abnormal—the pituitary is of normal contour and size; the heart shadow is rather large for a child its age but not for its size; ossification is not advanced beyond age of infant.

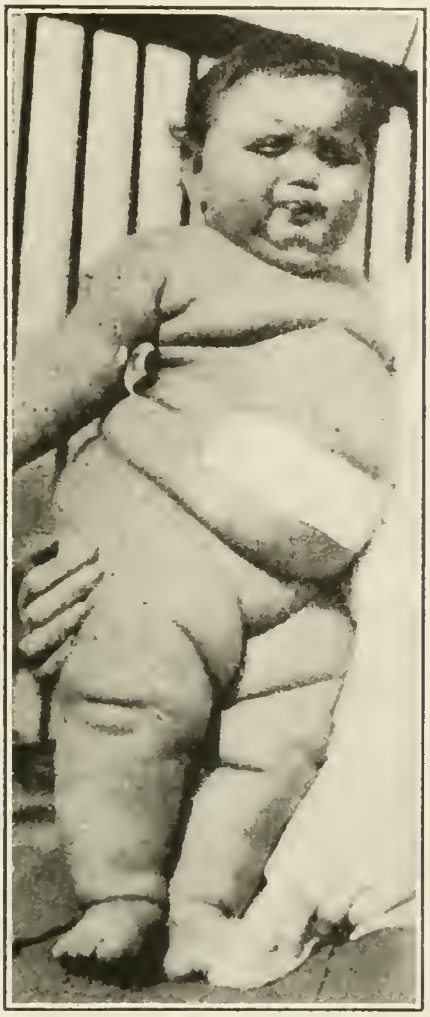
Three examinations of the eye-grounds by 3 different eye specialists revealed nothing abnormal. There was no hyperglycemia; no reaction after hypodermic injection of pituitary extract. The infant showed a marked hypersensitiveness to atropin when the pupils were dilated. Sugar tolerance could not be determined.

Date	1/7	1/14	1/21	1/28	2/11	2/25	4/8	5/27	7/1	8/3	9/24
Age—In Weeks	6	7	8	9	11	13	22	29	34	40	48
Weight—Pounds	11	12	13	13	15	16	19	25	30	34	39
Ounces	13	8	—	14	7	3	10	9	—	—	12

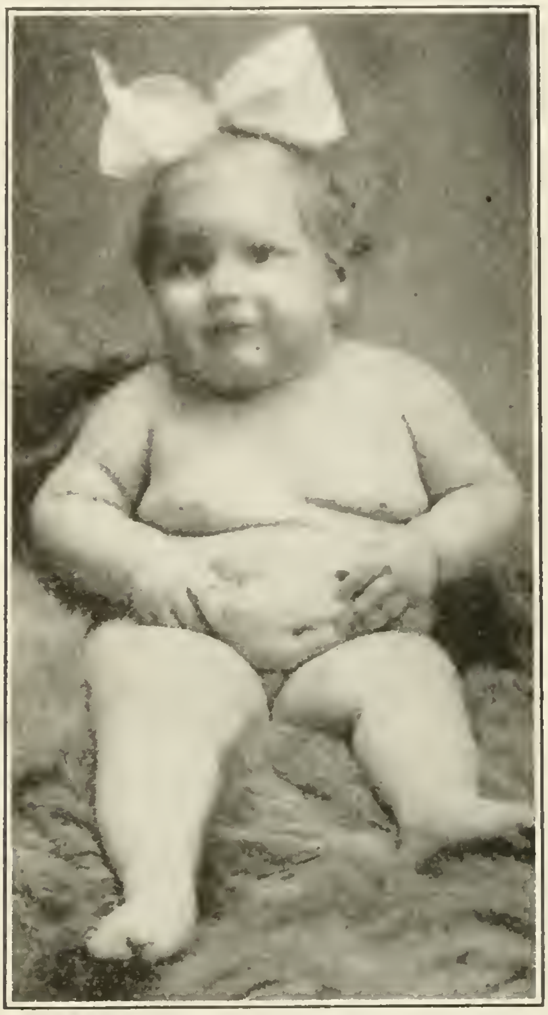
For the weights, prior to her visit to our clinic, I am indebted to the nurse in charge of Cannon Street Board of Health Milk

Station. The birth weight is not definitely known. Up to the age of 48 weeks the infant had been breast fed exclusively, with the exception of orange juice which had been added at first visit to clinic.

To every physician who had seen the infant, except the writer, the diagnosis seemed perfectly clear. Everyone was convinced that it was a case of dyspituitarism. While I did not deny the possibility of such an assumption, there was no tangible reason for such belief except the marked adiposity which was undeniable. It has been my good fortune to have fed many marasmic infants, and I have seen not a few such infants develop adiposity almost to as marked degree as this patient.



Baby Z., age 10 months, showing marked adiposity.



Baby C. C., age 21 months, showing adiposity similar to Baby Z. Child is now 6 years old and shows no signs of dysendocrinism.

The patient whose photograph is presented (C. C.) is now 6 years old, in perfect health, and does not show any evidence of dysendocrinism. (This baby weighed 7 lbs. at 7 months and 35 lbs. at 1 year and 9 months.)

To the writer it seemed that the analysis of the mother's milk might throw some light on this subject; and so it did. Four analyses of the milk by 4 different chemists revealed a fat percentage of between 6 to 7 per cent (all the milk that could be expressed with a breast pump was used in the examinations—not only strippings).

On August 3, the child was given small doses of thyroid and pituitary (Burroughs Wellcome Mixed Glandular Tablet No. 1). At the next visit, Sept. 24, the infant showed a gain of 5 pounds and 12 ounces—a greater gain per week than ever before. The mother was told to put the baby on a formula, to see whether the infant would continue to gain on a limited number of calories, but the mother refused to wean the baby.

Summary. Every fat baby has not a tumor of the pituitary.

316 West 94th Street.

ACUTE OCCLUSION OF THE PYLORUS. (Deutsche Medizinische Wochenschrift, Berlin, Jan. 30, 1919.) In Boyksen's two cases the pylorus had become suddenly occluded on account of some dietetic indiscretion or from complete closure of a previous partial stenosis. In both, the cardia had become closed by a kind of valve formation, and fermentation in the stomach had caused extreme dilatation compelling a laparotomy without delay. No hope from conservative measures is possible in such a case, although this is promising with arteriomesenteric occlusion of the duodenum when the pylorus region is free from anatomic changes. With anatomic changes, delay is dangerous. Strength is lost so rapidly that the case may become inoperable in twelve hours. The success in these two cases was due to the promptness with which the laparotomy was done. If the stomach contents are vomited, the stomach may be empty and small.—*Journal A. M. A.*

THE OCCURRENCE OF HYMENOLEPIS NANA INFECTION IN AN INSTITUTE FOR CHILDREN.*

By Frederick C. Narr, M.D.,
Pittsburgh, Pa.

On assuming the duties of pathologist to St. Vincent's Home and Maternity Hospital, Philadelphia, and at the suggestion of Dr. John A. Kolmer, the feces of all the children of the institution were examined for evidence of intestinal parasitism. The children may have been in the institution since birth, or maybe brought there at varying ages. Unless removed by parent or guardian they remain until 5 or 6 years of age, when they are transferred to another institution.

In these routine examinations ascaris lumbricoides, oxyuris vermicularis and hymenolepis nana were found. The latter is the subject of the present study.

The parasite in question is one of the smallest of the tape worms, measuring but 8 to 50 mm. in length and from 0.5 to 6.9 mm. broad. For a detailed description of the worm, the reader is referred to any of the text books on parasitology or to a most excellent article on this subject by B. H. Ransom in Bulletin No. 18 of the Public Health and Marine Hospital Service of the United States. From this article data have been freely drawn. Because of the small size of the parasite, the diagnosis of its presence is practically only made by the microscopical examination of the feces and the discovery of the characteristic ova. These are globular or oval and possess 2 membranes. The inner membrane has at each pole a fairly distinct rounded projection, from which filamentous appendages, almost encircling the ova, as wavy threads, extend. The ova are clear and transparent, at times yellowish in color. Because of their transparency little light should be used in microscopic examination or the ova will be overlooked. The scolex of the embryo which is surrounded by the inner membrane, presents 6 hooklets.

The parasite was first found in rats by Dujardin in 1845. Six years later, it was found in man in Cairo, Egypt, by Bilharz. The parasite from this case was described by Siebold in 1852. Spooner reported the first case in America from Philadelphia in 1872.

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*From the laboratory of St. Vincent's Home for Children and Maternity Hospital, Philadelphia.

Since this time it has been reported fairly frequently, Ransom collecting 25 cases in United States up to 1904 and Schloss reporting 14 of his own cases and collecting 9 more American cases to the year 1909. The series here reported includes 25 cases.

Most of the tape worms, the common beef tape worm for example, cannot be transmitted from man to man; they first must go through an intermediate host. In case of the beef tape worm, the beef is the intermediate host. This stage development of the worm in the beef is the cysticerus. Man eating such beef becomes the definitive host through development of the cysticercus to the adult worm.

Rats have been found with both the adult hymenolepis nana and the cysticercoids which would indicate that an intermediate host is not necessary for infestment by this parasite, at least in rats. Most authorities agree that hymenolepis nana of rats and man are identical although this belief is not unanimous. Further, no evidence has been found of the existence of the cysticercoid stage in man. Many attempts have been made to find the cysticercus of this worm in other forms of life. Ransom in his article tells of the examination of snails, meal worms, arthropods, molluscs, worms, flies, lice, the larvae of beetles living in beans, etc. without result with the exception that on 2 occasions meal worms were found to harbor cercocysts. These were fed to man with negative results. It should also be pointed out that these cercocysts are believed to belong to another worm and not to hymenolepis nana.

Grassi and Rovelli were able to cause hymenolepis nana infestment in white rats by feeding them the mature segments of this worm that had been obtained from rats. In Grassi and Rovelli's work they were able to obtain well developed worms in from 4 to 8 days, while worms with eggs were recovered in 15 days and eggs were recovered from the droppings of the rats in 30 days. One of the cases in our series was a child who had been in the institution but 2 weeks. This child had not been examined for intestinal parasites on admission, however.

The institution under consideration consists of a main building and an isolation building. The main building is divided into an old wing and a new wing, the 2 being separated by the administrative section. In the old wing there is but one ward which we will call Ward No. 1. On the first floor of the new wing is Ward No. 2, on the second floor of the new wing is Ward No. 3, on the third floor of the new wing is Ward No. 4, and on the fourth floor of the new wing is Ward No. 5. On admission children, unless born here, are confined first to the isolation building for a period of at least 2 weeks. At the expiration of this time, if well, they are sent to the proper ward according to age, sex and general development. Ward No. 1 is for boys whose ages range from 1½ to 6 years. Ward No. 2 is for boys and girls between 1½ and 3 years, but on the whole these children are under-developed. Ward No. 3 is for infants. Ward No. 4 is for boys and girls of the creeping stage. Ward No. 5 is for girls whose ages range between 2 and 5 years. The children from the wards have their separate dining rooms. All food is prepared in the same kitchen, but the diets must vary in types of food; the variant being cooked foods such as meat, potatoes, soup, etc. This, of course, excludes the infants' food. The separate wards have separate dormitories and play rooms, so that the children from one ward do not come in contact with the children of another unless it be in the isolation ward, or as one child on reaching a certain age moves up to another ward. Ward No. 1 contained 85 boys; of this number 12 were infested with the parasite in question, more than 14 per cent. In Wards Nos. 2, 3 and 4 there were no cases, but in Ward No. 5, among 72 girls, there were 13 cases, more than 18 per cent. In the infested wards more than 16 per cent were infested. Excluding the infants, who we would expect to be free, practically 10 per cent of the children of the institution were infested. Should mice have been a factor in the transmission of the infestion, we would expect a more even distribution, or the wards of the lower floors to show the highest percentage of infestion. Yet in the new wing the first, second and third floors were entirely free and the ward highest from the ground showed the largest percentage.. Mouse and rat traps were placed about the institution, particularly in the pantry and kitchen, but no mice or rats were caught here. On the other hand mice were caught in the isolation building but were all (6) free from intestinal parasites.

SYMPTOMS: A large number of symptoms have been attributed to the presence of this parasite, among which are convulsions, vomiting, diarrhea, abdominal pain, pruritis ani and nasi, loss of appetite, etc. While an institution in the nature of a home is not an ideal place for the observation of minor symptoms, still the more serious ones would not be overlooked. However, not one of these symptoms has been reported in our 25 cases. Eosinophilia was present in all cases, the lowest being 4 per cent, the highest 16 per cent, the average 10 per cent.

From the distribution of the infestment, the isolation of the children of one ward from another, the absence of mice from the main building, and the lack of parasitism in those caught, it is concluded that in this series of cases rodents have no part in the spread of the hymenolepis nana, but that direct contact, child to child is the most probable mode of transmission.

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Calomel Inunctions (Jour. A. M. A., Nov. 8, 1919). H. N. Cole and Sidney Littman, Cleveland, have experimented with the effects of the substitution of calomel inunctions for syphilis instead of the mercurial blue ointment, which is very uncleanly, leads to discovery, and frequently sets up an irritation of the skin. The advantage of lack of salivation means lack of effect on the system. Brief notes are given of 54 patients treated intensively with calomel rubs, and the conclusions reached are as follows: "1. Calomel inunctions are almost totally inefficient against primary and secondary syphilis. 2. Calomel inunctions very rarely produce salivation or gingivitis. This means poor absorption of the mercury and explains this clinical inefficiency. 3. Calomel rubs occasionally produce a dermatitis. These results have led us to abandon calomel inunctions, and we would strongly advise against their further use in the treatment of syphilis."—*Journal A. M. A.*

CONTROL OF HEMORRHAGE IN THE NEW BORN.

By Oscar Berghausen, A.B., M.D.

Cincinnati.

Hemorrhage in the new born occurs spontaneously or as the result of trauma. When the hemorrhage is slight, pressure alone may suffice to control it, with or without the aid of a styptic, adrenalin, coagulose, thromboplastin, or coagulen (ciba), applied locally. When such simple measures are not sufficient, we are justified in using horse serum, whole human blood, or coagulen, thromboplastin, or coagulose, subcutaneously, in the hope of introducing the element needed to facilitate coagulation. When the hemorrhage is severe at the outset, or oozing persists and will not cease after employing one of the above simple measures, then we must resort to blood transfusion. This latter procedure is life saving and the experience of having saved a helpless exsanguinated infant from certain death is indeed a most happy one.

For the transfusion either whole or citrated blood may be used. My own experience is limited to the use of the father's or mother's blood, collected in 2 per cent. sodium citrate solution. Although reactions are likely to follow, an elevation of temperature approaching 100-102° F., with or without a chill, these quickly pass off and leave no deleterious after-effects. Since it is quite difficult to transfuse the young infant, the use of citrated blood simplifies the technique, for a slight delay will cause whole blood to clot. The success which has followed the use of citrated blood in the exsanguinated infant would speak for the use of citrated blood in all transfusions. Surely if the bleeding infant can withstand the slight reactions which follow, reactions which may occur in an adult when small amounts of human serum are given intravenously, then an adult suffering from some form of grave anemia can safely be transfused with citrated blood. At least my experience would tend to show that these reactions may be considered lightly, since grave complications never follow in the infant or in the adult.

The Injection.—Having collected about 200 c.c. of the parent's blood in a 2 per cent. sodium citrate solution, the mixture is filtered through sterile gauze and kept at body temperature. The infant is placed upon the table and held firmly by a nurse. The peripheral veins are then examined. By making the proper pressure it may be possible to introduce a medium-sized needle into the veins of the arm, or into the external jugular vein. When the needle cannot be introduced successfully into a peripheral vein, then the blood can safely be introduced directly into the superior longitudinal sinus. I have injected as much as 100 to 150 c.c. of citrated blood into the sinus, using a 50 c.c. Luer all glass syringe. The needle is introduced just to the left of the median line over the center of the "soft spot," and when blood drops from the needle the Luer syringe, filled with blood, is quickly attached. The injection is made slowly, the assistant watching the child carefully, noting any twitching of the face or cessation in breathing. If the face twitches or breathing becomes labored then the injection must be made more slowly, for these symptoms may possibly be due to sudden increase in the intracranial pressure. The syringe can be readily detached from the needle, when blood should again drop from the opening, before resuming the injection. The infant tends to move its head very freely and the nurse cannot always keep it quiet. At such times the needle may pierce the sinus wall and cause the blood to spread over the surface of the brain. I do not know that this has happened in the injection which I have made into the longitudinal sinus, but I would not fear its occurrence because the citrated blood, differing from whole blood in this respect, would not tend to clot and later cicatrize.

When the blood is introduced directly into the circulation the results are immediate, and only small amounts are necessary to stop the bleeding and to rescue the infant from certain death. We should aim to introduce as much as 100 to 150 c.c. of the blood into the circulation, but when this is impossible smaller amounts will be found sufficient to control the hemorrhage. I am in the habit of making subcutaneous injections of the citrated blood in addition to the intravenous injections. This blood is slowly absorbed, acts as food and tends to prevent recurrence of the bleeding

The table below shows the results obtained in transfusing 6 infants after simple measures had failed to stop the bleeding. In 2 cases the hemorrhage following a circumcision could not be stopped until transfusion had been resorted to.

No.	1	2	3	4	5	6
Age in days	2½	7	3	5	1	7
Hemorrhage—						
source	stomach	circumcision	intestinal	circumcision	wound & mouth	skin & mouth
duration in days	2	1	2	2	1	1
amount	large	large	large	large	large	large
Previous measures—						
surgical	no	yes	no	yes	yes	no
styptics	no	yes	no	yes	yes	no
horse serum	15 c.c.	no	no	no	no	no
coagulose	no	locally	no	yes	yes	no
human blood subcutaneously	no	no	no	no	20 c.c.	no
Result.	nil	nil	nil	nil	nil	nil
Transfusion (in c.c.)—						
intravenous	0	0	0	75 c.c.	0	0
per longitudinal sinus	45	25	12	0	100-150	30
subcutaneous	40	50	30	25	0	20
Total amount	85	75	42	100	100-150	50
Immediate result	good	good	good	good	good	good
Bleeding stopped	at once	at once	at once	at once	at once	at once
Final result	recovery	recovery	recovery	recovery	recovery	recovery

AUTOTRANSPLANTATION OF KIDNEY (Jour. A. M. A., Dec. 13, 1919). Carleton Dederer reports a successful attempt at transplantation of a dog's kidney into the neck, after five partial failures. "May 2, 1917, the left kidney of Dog B 976 was transplanted into the neck by uniting the renal artery at its bifurcation with the common carotid artery, and the renal vein to the external jugular vein. Two weeks after transplantation, right nephrectomy was performed. The dog lived more than four months; it died as a result of hydronephrosis." The question of hydronephrosis, Dederer says, may become important in this kind of experiment.—*Journal A. M. A.*

CHILD WELFARE WORK IN MASSACHUSETTS.*

By Richard M. Smith, M.D.,
Boston.

One of the most obvious results of the war has been the general widespread interest in problems of public health, and child welfare has received its share of this interest. The feeling of sacrifice and service, which the war has stimulated, is being directed toward the peace problem of insuring public health. Physicians and laymen alike have been devoting time and energy in order that plans might be perfected to develop this work.

Public health work, child welfare included, is of two types—public or official and private or voluntary. One of the most pressing matters in connection with the expansion of child welfare work is the coördination of these two kinds of activity. Private endeavor frequently antedates the work of public officials. It is extremely well done in many communities, but often is narrow in its vision. The work of public officials is usually developed slowly except in a few of the large cities and, except when under political influence, is founded on a broad basis and permanent in its character.

In Massachusetts, child welfare work had been done by private organizations in various parts of the state for a good many years. It received official recognition with the reorganization of the State Department of Health and the appointment of Dr. Allan J. McLaughlin as Commissioner in 1914. At that time the Division of Hygiene was established and Prof. Gunn was placed in charge. He outlined some of the general work of the Division of Hygiene with reference to child welfare and secured the publication of a book on the care of the baby.

In 1916 Dr. Lyman A. Jones was appointed Director of the Division of Hygiene, and he developed still further the general state-wide plan for furthering child welfare work. This was done through exhibits, through literature and through a series of prenatal letters, which were sent to all expectant mothers whose names were given to the department.

Under the stimulus of the war and the realization that child welfare work must be developed to an even greater degree, in

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*Read at the annual meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

May, 1917, Dr. McLaughlin appointed a special committee on child conservation composed of two members of the public health council, Dr. David L. Edsall and Dr. William J. Gallivan, and the Director of the Division of Hygiene, Dr. Lyman A. Jones. He also appointed an advisory committee composed of non-official individuals representing the various child welfare interests in the state. On this advisory committee were two pediatricians, one obstetrician, a public health nurse, a representative of the Council of National Defense, a representative of the Red Cross and two physicians interested in problems of delinquency and feeble mindedness. The members were as follows: Miss Mary Beard, Dr. Robert L. DeNormandie (Dr. John B. Swift substituted for Dr. DeNormandie April 9 to August 5, 1918), Dr. Walter E. Fernald, Dr. William Healy, Mrs. W. H. Lathrop, Miss Gertrude Peabody, Dr. Richard M. Smith and Dr. Fritz B. Talbot.

This committee applied to the Red Cross for funds to carry on a state-wide campaign. The request was not granted by the national association, but was granted by the Boston Metropolitan Chapter. This was done because the Chapter recognized 2 years in advance of national headquarters that child welfare work was essentially a war measure and that Red Cross funds might be expended properly for public health work. The Red Cross paid the salary of 8 nurses who were appointed and made directly responsible to the committee. Governor McCall was also appealed to for funds to pay for travelling and other incidental expenses of the nurses. Five thousand dollars was given by him for that purpose. The incidental expenses of the committee, such as stenography and stationery, were borne by the State Department of Health.

The committee, through its 8 nurses, began immediately to make a survey of the state of Massachusetts in order that we might determine what actually was being done for infants and children by public officials and by private organizations. With this survey as a basis, the committee made recommendations for further development of child welfare work. The recommendations went through the Commissioner of Health to the local boards of health and directly from the committee to the local child welfare committees. These local committees were organized throughout the state as a part of the general plan. They were appointed through the agency of the Council of National Defense and contained in their personnel the same type of representatives as that of the advisory committee appointed by the Commissioner of Health. It was felt that by the appointment of a special committee on a more or less war basis, it would be possible to draw together all the groups of the community interested in child welfare which in some cases at least had been working previously at cross purposes. Results have justified this course.

The committee attempted in its recommendations to do two things—first, to stimulate general interest throughout the state in problems of child welfare, and second, to make definite suggestions for work in particular communities.

The general campaign of education included public meetings, the distribution of literature and many personal interviews with prominent public officials and private individuals. In some instances the nurses attended town meetings in order to urge appropriations for public health nurses.

The committee also prepared literature for general distribution. An article was written on the diet of children from two to six years of age for the special use of nurses and others interested in providing satisfactory food for children of this age. A pamphlet was also prepared on the care of the baby in hot weather.

Specific recommendations varied in different communities, but the committee undertook a definite campaign to establish the necessity for special training for nurses who were to do public health work. It was found frequently that the nurses employed by the local boards of health or by private organizations had only the ordinary hospital training. The committee realized that if efficient child welfare work was to be done, it could be done only by properly trained individuals.

In some instances the committee aided the local communities in raising funds, but in general each community assumed its own financial burden.

In addition to the meetings held throughout the state, there were several large meetings in Boston and in other important centers. At these meetings members of the committee, the nurses, the officials of the State Department of Health or of the local boards of health, or members of the local child welfare societies spoke. All this work was done in close coöperation with the district health officers who are the local representatives of the Commissioner of Health.

The committee also interested itself in day nurseries. We found that the number of day nurseries was beginning to increase because of the temptation for women to earn high wages in the mills. In this work the committee coöperated with various other organizations. A bill was presented to the Legislature this year with the backing of the committee, asking that authority be given to the State Department of Health to inspect day nurseries and to establish minimum requirements for equipment and care. This bill was favorably reported by the committee, but unfortunately was amended on the floor of the House, giving the authority to the local boards of health.

The committee has been interested in supporting a bill now before the Legislature which provides for physical education in public schools. There is also a bill before the Legislature which the committee supports in principle, though not in all of its details, granting maternity benefits.

At the request of the State Board of Education, the committee prepared an outline on child welfare which is being used in the vocational and evening schools conducted by the Department of Education. This outline has been favorably received and many copies have been printed.

At the end of the first year's work of the committee, the Department of Health published a Child Conservation Bulletin reporting the accomplishments of the year. The bulletin contained also general articles on child welfare by various members of the committee.

There has been organized recently in Massachusetts through the efforts of the Commissioner of Health a voluntary committee on health interesting itself primarily in questions of health publicity. Child welfare is represented by one of the members of the advisory committee on child conservation. At the present time the health committee is conducting health columns in several of the leading newspapers of the state. The circulation of papers now carrying the health columns is over 275,000 a day. Child welfare receives a considerable amount of publicity by this means.

Posters on cancer have been prepared which have attracted a wide interest. It is planned to devise some similar method of educational propaganda on child welfare.

In September, 1918, the original committee dissolved and a new committee with the same personnel was appointed by Dr. Eugene R. Kelley (who succeeded Dr. McLaughlin in April, 1918) as an advisory committee to the Division of Hygiene. (Dr. Merrill E. Champion succeeded Dr. Jones in 1918.) This change in organization was made because it was felt by everyone that the important thing to be done this year was to make permanent the work started last year. The local committees of the Council of National Defense lapsed like other war activities with the dissolution of the central committee. Child welfare work has been done this year, therefore, through the regular channels of the Department of Health. The budget of the Division of Hygiene has been increased to meet the additional demands made by the increased work.

One of the questions which at the present time is pressing for solution is that of public health work, including child welfare in rural communities, many of which are too small to support a nurse. In several instances towns have united in employing a public health nurse. Transportation has also been provided. This group system is the most obvious method of meeting the situation and is working well in Massachusetts. The plans for future development of public health nursing of this sort is being worked out in coöperation with the Red Cross. This is done by conferences between the Director of the Division of Hygiene, the head of the public health nurses in the employ of the State Department of Health, the district health officers and the director of nursing of the New England division of the Red Cross.

Statistics tell only a part of the story of the work which the committee has accomplished. The greatest good has come from the widespread interest aroused in the welfare of children and in public health in general. A few figures may be of interest. There are 235 visiting nursing associations in Massachusetts and a large proportion of them are giving special attention to child welfare as a result of the committee's work. Sixty new public health nurses have been employed or authorized as a direct result of the campaign conducted by the committee. Over $45,000 has been provided by cities and towns for public health nurses and over $50,000 by private organizations.

In looking forward to the work of the future, it seems to me the things to be done in Massachusetts and in many other states are, first, a better coördination of the work of public officials and of local private organizations; second, a further development of public health nursing, with especial reference to child welfare in rural communities, and third, constant stimulation by a central committee to keep standards of work high and beyond political control. Child welfare was never so important as at the present time, and no effort is too great to see that efficiency is secured.

ANAPHYLACTIC DEATH OF ASTHMATICS (Jour. A. M. A., Dec. 27. 1919), T. H. Boughton takes note of the cases of sudden death following the use of antitoxic serums which are now generally attributed to anaphylaxis from sensitization of horse serum. Of course, the number is small compared with the total number of cases in which injection was made, but it is not the less important to recognize their possibility. The connection of these deaths with asthma is specially noted and the literature discussed, though it is impossible to show any direct relationship in all cases. Boughton reports a case of special interest on account of the small amount of serum injected (1 minim), and the striking similarity of post-mortem findings to those observed experimentally in anaphylaxis in animals, and, also, because it is the only case of acute anaphylaxis death, uncomplicated by other morbid conditions, in which he has been able to obtain knowledge of the microscopic findings. In his summary of the case and findings, he says that in a certain proportion of asthmatics who are sensitive to horse serum, serious symptoms, and sometimes death, may follow injections. There is an uncertainty in existing methods of desensitization, and asthmatics who require curative or prophylactic serum should be tested by the cutaneous method as to their sensitiveness to horse serum. If they are not sensitive to horse serum, therapeutic doses of antitoxin are probably safe. It might be well to prepare antitoxins from other animals than the horse for use in patients sensitive to horse serum.—*Journal A. M. A.*

THE RESULTS OF CHILDREN'S YEAR.*

By Anna E. Rude, M.D.,

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The Children's Year Campaign, inaugurated as a necessary war time measure for safeguarding child life, met with quick and sincere response from the entire country. Like some other war emergency measures, it has contributed something of truly immeasurable value to adult education. This nation has not only a fresh and renewed interest in the health and vigor of its children but it is beginning to realize that all measures for child welfare are the child's right and the nation's imperative need.

April 6, 1918, the day we entered our second year of war, marked the opening of Children's Year. The program outlined by the Children's Bureau to embrace the general well-being of all children suggested five topics under which the work might fall: (1) Public protection of mothers, infants and young children; (2) Home care and income; (3) Child labor and education; (4) Recreation; (5) Children in need of special care. The popularization of this program was undertaken by the Women's Committee of the Council of National Defense, which, through its State Child Welfare Chairmen and their local committees, represented an active working body of 11,000,000 women.

The first and perhaps the most popular activity of Children's Year was the weighing and measuring of children under 6 years of age for the purpose of ascertaining the development of the child of pre-school age; of demonstrating that the ratio of weight to height is a rough index of normal development; of showing that many deviations from the normal may be easily remedied; and of arriving at standards of height and weight for American children. The popularity of the weighing and measuring tests can be measured very concretely by the fact that there was a demand for nearly 7,000,000 record cards prepared by the Bureau for use at the examinations.

It is estimated that 17,000 cities, towns and villages, representing every State in the Union, participated in this "drive." A mid-western State weighed and measured 65 per cent of the pre-school age population and returned 166,000 record cards to the Bureau. Three States have weighed and measured one-half of their young children while 7 other States returned cards for one-third of their pre-school children. Another middle western State, which was most efficiently organized, having county chairmen in 98 of its countries, and 1,111 committees indicating active groups interested in various phases of child welfare, have 360.000 pre-school children weighed and measured.

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* Read at the seventieth annual session of the A. M. A., Section on Diseases of Children, held at Atlantic City, N. J., June 11, 12 and 13, 1919.

In many localities far greater results than the simple nutritional index of the pre-school child resulted from the weighing and measuring drive. For through effective organization of the Women's Committees and the generous volunteer coöperation of physicians, complete physical examinations were made, drawing attention to remedial defects common to this neglected period of childhood.

The Children's Bureau is making a very careful analysis of at least 100,000 records of cases which have had physical examinations by physicians in order to tabulate comparisons of weights and heights, and the weight-height ratio of children in different sections of the country and for children of foreign parentage.

There is no possible way of estimating the far-reaching results of all the health measures which have been stimulated since April, 1918, but we may hope that the reduction in the nation's infant and maternal mortality rates during the next few years will testify to the sincerity of purpose and continued effect of those who worked so splendidly under the impetus of Children's Year.

An improvement in the vital statistics of the country, especially in birth registration, may justly be anticipated from a continuation of the birth registration tests in local communities made with the personal assistance of nurses from the Bureau's staff. These tests have been undertaken in rural communities with the county as the unit and in small municipalities as well as large cities where the block is the unit. At present only 20 States are included in the U. S. Birth Registration Area, but by utilizing throughout the country the vast machinery of women's organizations, with proper supervision and assistance, we could hope to place all the States in the birth registration area.

Typical of the good work done by many communities is the experience of one large but sparsely populated far western State where 53,462 children were weighed and measured. Of this number 40,000 had complete physical examination by physicians. The program as outlined in this State provided for subsequent examinations in order to reach a larger number of children and also in order to demonstrate the value of periodic physical examinations. Tabulations from these 40,000 physical examinations showed 47 per cent correctable defects. Among these 36 per cent had adenoids and enlarged tonsils; 5.5 per cent defective teeth and 24.7 per cent were below weight or height. As the result of the findings from these tabulations, 17 permanent county health centers have been established; 10 county public health nurses employed; legislative action has been taken providing for the training of dental hygienists to care for the children's teeth; educational legislation providing for more modern methods of teaching and for compulsory schooling; 120,000 dietaries besides 30,000 Children's Year bulletins were distributed throughout the State, and the State University has inaugurated a correspondence extension course on scientific motherhood. To mark the culmination of the Children's Year program in this State and to insure the permanency of the work, the Women's Committee have succeeded in establishing a Division of Child Hygiene under the State Board of Health with an appropriation of $20,000.

Realizing the fundamental importance of health centers and public health nurses, the Children's Bureau issued, among its 13 Children's Year leaflets, very detailed publicity on these two subjects. It is gratifying to know that public health nurses have already been reported in 24 States, with 137 nurses in 10 of these States, and 134 children's health centers where mothers may be given expert advice concerning the care of their children. With these health centers serving as a community educational nucleus, there have very naturally and logically developed other centers of child welfare work such as prenatal clinics, nutritional clinics, milk depots, etc.

Very definite permanent work is to be maintained through State Divisions of Child Hygiene which have increased from 7 at the beginning of 1918 to 22 at present, and several others are pending decision. Legislation creating these new divisions was definitely planned as the culmination of the Children's Year program in a number of States where the physicians, active in the campaign, stated frankly that to help establish such divisions was their real purpose in coöperating in Children's Year. The following States now have State Divisions dealing with the welfare of children: California, Connecticut, Florida, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Minnesota, Montana, North Carolina, New Jersey, New Mexico, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Wisconsin and West Virginia.

With the opportunities and demand for the public health nurse far in excess of the supply, some interesting educational opportunities have developed. One New England State determined to meet the demand for nurses which the weighing and measuring test stimulated by providing scholarships for nurses during their special training. The Women's Children's Year Committee raised and gave to the Child Welfare Department a sum sufficient to provide for 5 scholarships in a 4 months course in public health in Boston. Three additional scholarships are to be given, all awarded on the condition that the nurse return to this State to fill for at least one year one of the vacancies awaiting trained public health nurses. This plan to put a public health nurse in every town or group of towns, as a result of Children's Year, is thus provided for by these scholarships. Another New England State has similar plans which it is promoting over the slogan: "A health center and a public health nurse for every township."

From the South comes a conspicuous example of how the new knowledge of the need for public health nurses aroused a community. The business men of a large Southern city suggested the campaign which raised $45,000 to be expended on child welfare work during Children's Year. In response to a request from the Child Welfare Association, of this city, the Children's Bureau has been able to coöperate by detailing experts from its staff to assist in the reorganization of the work of the Child Welfare Association and Visiting Nurse Association. Besides placing a trained supervisor in charge, this nursing staff has increased from 8 to 33 nurses, and is carrying on systematically well organized, intensive welfare work from 29 new health centers which have been established in the city during Children's Year.

During the midsummer vacation, the second part of the Children's Year campaign, or "Recreation Drive," was undertaken in many localities with the aim of increasing physical vigor among children by better recreational facilities. New playgrounds were reported from 16 different States and the necessity for supervised recreation of children and youth has been brought to the attention of the country with new force, particularly in rural localities where even the most simple equipment will tend to revolutionize community and school play.

The final activity of the year was the "Back-to-School" Drive, incorporating the "Stay-in-School" campaign. The object of this drive was to lessen child labor by returning to school children who, attracted by war time wages, had entered and remained in industry. Forty-four States and the District of Columbia, enthusiastically coöperated in the movement, aiming to prevent boys and girls from entering employment before they are physically mature or before they have the training which insures efficiency. Scholarship funds, to keep needy children in school after the legal working age is reached, have been established in a number of cities. Several States have worked to secure legislation raising the legal standards for child labor and school attendance, but many communities have concentrated on getting an adequate enforcement of the laws already existing. The effects of educational extension through continuation schools or compulsory education will tend to decrease the appalling degree of illiteracy still revealed in certain rural districts—an illiteracy which always accompanies rural child labor. And it is to be hoped that educational extension will include raising the standards of rural schools so that they may adequately serve the needs of their communities, for this would probably do more than any other one factor to solve the nation's child labor problem.

In expressing his approval of Children's Year, President Wilson expressed also the hope that the work would so successfully develop as to make possible the setting up of certain "irreducible minimum standards for the health, education, and work of the American child, so, as a climax, of the year's work the Children's Bureau arranged for a conference in Washington of many American experts and foreign guests, interested in the protection of maternity, infancy and childhood. The spirit of coöperation which this conference radiated and the inspiration gained first hand from those who, realizing the necessity for child conservation, had in spite of the horrors of 4 years of war raised their standards protecting mothers and children and had lowered their infant mortality rates to the lowest in their history, has undoubtedly made for renewed and vigorous efforts for the protection of mothers and children in this country.

The tentative minimum standards drawn up at the Washington Conference were later discussed at the regional conferences held in 9 principal cities of the United States, from the Atlantic Coast to the Pacific. With the awakened consciousness of the American public to the necessity for the protection of childhood by the continuance of health supervision from infancy to adolescence, these standards are offered not as an aim but rather as the definition of opportunities which should be available to every American child and also as suggestions which may serve as points of departure in a scheme for the national standardization of child welfare work.

MINIMUM STANDARDS FOR PUBLIC PROTECTION OF THE HEALTH OF MOTHERS AND CHILDREN.

MATERNITY.

1. Maternity or prenatal centers, sufficient to provide for all cases not receiving prenatal supervision from private physicians. The work of such a center should include: (a) Complete physical examination by physician as early in pregnancy as possible, including examination of heart, lungs, abdomen and urine, and the taking of blood pressure; internal examination and pelvic measurements before seventh month in primipara; examination of urine every four weeks during early months, at least every two weeks after sixth month, and more frequently if indicated; Wassermann test, when indicated. (b) Instruction in hygiene of maternity and supervision throughout pregnancy, through at least monthly visits to a maternity center until end of sixth month, and every two weeks thereafter. Literature to be given mother to acquaint her with the principles of infant hygiene.

(c) Employment of sufficient number of public health nurses to do home visiting and to give instructions to expectant mothers in hygiene of pregnancy and early infancy; to make visits and to care for patient in puerperium; and to see that every infant is referred to an infant welfare center. (d) Confinement at home by a physician or a properly trained and qualified attendant, or in a hospital. (e) Nursing service at home at the time of confinement and during the lying-in period, or hospital care. (f) Daily visits through fifth day, and at least two other visits during second week by physician or nurse from maternity center. (g) At least ten days' rest in bed after a normal delivery, with sufficient household service to allow mother to recuperate. (h) Examination by physician before discharging patient not later than six weeks after delivery.

2. Clinics, such as dental clinics and venereal clinics, for needed treatment during pregnancy.
3. Maternity hospitals, or maternity wards in general hospitals, sufficient to provide care in all complicated cases and for all women wishing hospital care; free or part-payment obstetrical care to be provided in every necessitous case at home or in a hospital.
4. All midwives to be required by law to show adequate training, and to be licensed and supervised.
5. Training and registration of household attendants to care, under the supervision of physician or public health nurse, for sickness in the home and for the home during sickness.
6. Education of general public as to problems presented by maternal and infant mortality and their solution.

INFANTS AND PRE-SCHOOL CHILDREN.

1. Complete birth registration by adequate legislation requiring reporting within three days after birth.
2. Prevention of infantile blindness by making and enforcing adequate laws for treatment of eyes of every infant at birth and supervision of all positive cases.
3. Sufficient number of children's health centers to give health instruction under medical supervision for all infants and children not under care of private physician, and to give instruction in care and feeding of children to mothers, at

least once a month throughout first year, and at regular intervals throughout preschool age. This center to include a nutrition clinic.

4. Children's health center to provide or to coöperate with sufficient number of public health nurses to make home visits to all infants and children of preschool age needing care—one public health nurse for average population of 2,000.

   Visits to the home are for the purpose of instructing the mother in: (a) Value of breast feeding. (b) Technic of nursing. (c) Technic of bath, sleep, clothing, ventilation, and general care of the baby, with demonstrations. (d) Preparation and technic of artificial feeding. (e) Dietary essentials and selection of food for the infant and for older children. (f) Prevention of disease in children.
5. Dental clinics; eye, ear, nose, and throat clinics; venereal and other clinics for the treatment of defects and disease.
6. Children's hospitals, or beds in general hospitals, or provision for medical and nursing care at home, sufficient to care for all sick infants and young children.
7. State licensing and supervision of all child-caring institutions or homes in which infants or young children are cared for.
8. General educational work in prevention of communicable disease and in hygiene and feeding of infants and young children, including compulsory course in child hygiene in the public schools.

SCHOOL CHILDREN.

1. Proper location, construction, hygiene and sanitation of schoolhouse; adequate room space—no overcrowding.
2. Adequate playground and recreational facilities, physical training and supervised recreation.
3. Open-air classes and rest periods for pre-tubercular and certain tuberculous children, and children with grave malnutrition. Special classes for children needing some form of special instruction due to physical or mental defect.
4. Full-time school nurse for not more than 1,000 children to give instruction in personal hygiene and diet, to make home visits, to advise and instruct mothers in principles of hygiene, nutrition and selection of family diet, and to take children to clinics with permission of parents.

5. Adequate space and equipment for school medical work and available laboratory service.
6. Part-time physician with one full-time nurse for not more than 2,000 children, or full-time physician with two full-time nurses for 4,000 children for: (a) Complete standardized basic physical examinations once a year, with determination of weight and height at beginning and end of each school year; monthly weighing wherever possible. (b) Continuous health record for each child to be kept on file with other records of the pupil. This should be a continuation of the preschool health record which should accompany the child to school. (c) Special examinations to be made of children referred by teacher or nurse. (d) Supervision to control communicable disease. (e) Recommendation of treatment for all remediable defects, diseases, deformities, and cases of malnutrition. (f) Follow-up work by nurse to see that physician's recommendations are carried out.
7. Available clinics for dentistry, nose, throat, eye, ear, skin and orthopedic work; and for free vaccination for smallpox and typhoid.
8. Nutrition classes for physically subnormal children, and the maintenance of mid-morning lunch or hot noonday meal when necessary.
9. Examination by psychiatrist of all atypical or retarded children.
10. Education of school child in health essentials.
11. General educational work in health and hygiene, including education of parent and teacher, to secure full coöperation in health program.

ADOLESCENT CHILDREN.

1. Complete standardized basic physical examination by physician, including weight and height, at least once a year, and recommendation for necessary treatment to be given at children's health center or school.
2. Clinics for treatment of defect and disease.
3. Supervision and instruction to insure: (a) Ample diet, with special attention to growth-producing foods. (b) Sufficient sleep and rest and fresh air. (c) Adequate and suitable

clothing. (d) Proper exercise for physical development. (e) Knowledge of sex hygiene and reproduction.

4. Full-time education compulsory to at least 16 years of age, adapted to meet the needs and interest of the adolescent mind, with vocational guidance and training.
5. Clean, ample recreational opportunities to meet social needs.
6. Legal protection from exploitation, vice, drug habits, etc.

MINIMUM STANDARDS FOR CHILDREN ENTERING EMPLOYMENT.

AGE MINIMUM.

An age minimum of 16 for employment in any occupation, except that children between 14 and 16 may be employed in agriculture and domestic service during vacation periods.

An age minimum of 18 for employment in and about mines and quarries.

An age minimum of 21 for night messenger service.

An age minimum of 21 for girls employed as messengers for telegraph and messenger companies.

Prohibition of the employment of minors in dangerous or hazardous occupations or at any work which will retard their proper physical development.

EDUCATIONAL MINIMUM.

All children shall be required to attend school for at least nine months each year, either full time or part time, between the ages of 7 and 18.

Children between 16 and 18 years of age who have completed the eighth grade and are legally and regularly employed shall be required to attend day continuation schools eight hours a week.

Children between 16 and 18 who have not completed the eighth grade or who are not regularly employed shall attend full-time school.

Vacation schools, placing special emphasis on healthful play and leisure time activities, shall be provided for all children.

PHYSICAL MINIMUM.

A child shall not be allowed to go to work until he has had a physical examination by a public health physician or school physician and has been found to be of normal development for a child of his age and physically fit for the work at which he is to be employed.

There shall be periodical medical examination of all working children who are under 18 years of age.

HOURS OF EMPLOYMENT.

No minor shall be employed more than 8 hours a day. The maximum working day for children between 16 and 18 shall be shorter than the legal working day for adults.

The hours spent at continuation schools by children under 18 years of age shall be counted as part of the working day.

Night work for minors shall be prohibited between 6 P. M. and 7 A. M.

MINIMUM WAGE.

Minors at work shall be paid at a rate of wages which for full-time work shall yield not less than the minimum essential for the "necessary cost of proper living." During a period of learning they may be rated as learners and *paid accordingly*. The length of the learning period should be fixed on educational principles only.

PLACEMENT AND EMPLOYMENT SUPERVISION.

There shall be a central agency which shall deal with all juvenile employment problems. Adequate provision shall be made for advising children when they leave school of the employment opportunities open to them, for assisting them in finding suitable work, and providing for them such supervision as may be needed during the first few years of their employment. All agencies working towards these ends shall be coördinated through the central agency.

ADMINISTRATION.

EMPLOYMENT CERTIFICATES.

Provision shall be made for issuing employment certificates to all children entering employment who are under 18 years of age.

An employment certificate shall not be issued to the child until the issuing officer has received, approved and filed the following: 1. Reliable documentary proof of the child's age. 2. Satisfactory evidence that the child has completed the eighth grade. 3. A certificate of physical fitness signed by a public health physician or school physician. This certificate shall state that the minor has been thoroughly examined by the physician and that he is physically qualified for the employment contemplated. 4. Promise of employment.

The certificate shall be issued to the employer and shall be returned by the employer to the issuing officer when the child leaves his employment.

The school last attended, the compulsory education department and the continuation schools shall be kept informed by the issuing officers of certificates issued or refused and of unemployed children for whom certificates have been issued.

Minors over 18 years of age shall be required to present evidence of age before being permitted to work in occupations in which their employment is prohibited.

Record forms shall be standardized and the issuing of employment certificates shall be under state supervision.

Reports shall be made to the factory inspection department of all certificates issued and refused.

COMPULSORY ATTENDANCE LAWS.

Full-time attendance officers adequately proportioned to the school population shall be provided in cities, towns and counties to enforce the school attendance law.

The enforcement of school attendance laws by city, town or county school authorities shall be under state supervision.

FACTORY INSPECTION AND PHYSICAL EXAMINATION OF EMPLOYED MINORS.

Inspection for the enforcement of all child labor laws, including those regulating the employment of children in mines or quarries, shall be under one and the same department. The number of inspectors shall be sufficient to insure the regular observance of the laws.

Provision should be made for a staff of physicians adequate to examine periodically all employed children under 18 years of age.

MINIMUM STANDARDS FOR THE PROTECTION OF CHILDREN IN NEED OF SPECIAL CARE.

1. GENERAL STATEMENT.

Every child should have normal home life, an opportunity for education, recreation, vocational preparation for life, and for moral and spiritual development in harmony with American ideals and the educational and spiritual agencies by which these rights of the child are normally safeguarded. The Conference recognizes the fundamental role of home, religion and education in the development of childhood.

Aside from the general fundamental duty of the state toward children in normal social conditions, ultimate responsibility for children who, on account of improper home conditions, physical handicap or delinquency, are in need of special care devolves upon the state. Particular legislation is required for children in need of such care, the aim of which should be the nearest approach to normal development. Laws enacted by the several states for these purposes should be coördinated as far as practicable in view of conditions in the several states, and in line with national ideals.

2. HOME CARE.

The aim of all provision for children in need of special care necessitating removals from their own homes, should be to secure for each child home life as nearly normal as possible, to safeguard his health, and provide opportunities for education, recreation, vocational preparation, and moral and spiritual development. To a much larger degree than at present, family homes may be used to advantage in the care of special classes of children.

3. ADEQUATE INCOMES.

Home Life, which is, in the words of the Conclusions of the White House Conference, "the highest and finest product of civilization," cannot be provided except upon the basis of an adequate income for each family, and hence private and governmental agencies charged with the responsibility for the welfare of children in need of special care should be urged to supplement the resources of the family wherever the income is insufficient, in such measure that the family budget conforms to the average standard of the community.

4. INCORPORATION, LICENSING AND SUPERVISION.

A State Board of Charities, or a similar supervisory body, should be held responsible for the regular inspection and licensing of every institution, agency, or association, public or private, incorporated or otherwise, that receives or cares for children who suffer from physical handicaps, or who are delinquent, dependent, or without suitable parental care.

This supervision should be exercised in harmony with democratic ideals which invite and encourage the service of efficient, altruistic forces of society in the common welfare. The incorporation of such institutions, agencies, and associations should be required, and should be subject to the approval of the State Board of Charities or similar body.

5. REMOVAL OF CHILDREN FROM THEIR HOMES.

Unless unusual conditions exist, the child's welfare is best promoted by keeping him in his own home. No child should be removed from his home unless it is impossible so to reconstruct family conditions or build and supplement family resources as to make the home safe for the child, or so to supervise the child as to make his continued presence safe for the community.

6. PRINCIPLES GOVERNING CHILD-PLACING.

This Conference reaffirms in all essentials the resolutions of the White House Conference of 1909 on the Care of Dependent Children. We believe they have been guides for communities and states that have sought to reshape their plans for children in need of special care. We commend them for consideration to all communities whose standards do not as yet conform to them, so that such standards may be translated into practice in the various states.

Before a child is placed in other than a temporary foster home adequate consideration should be given to his health, mentality, character, and family history and circumstances. Remedial physical defects should be corrected.

Complete records of every child under care are necessary to a proper understanding of the child's heredity, development and progress while under the care of the agency.

Careful and wise investigation of foster homes are prerequisites to the placing of children. Adequate standards should be required of the foster families as to the character, intelligence, experience, training, ability, income and environment.

A complete record should be kept of each foster home, giving the information on which approval was based. The records should also show the agency's contacts with the family from time to time for the purpose of indicating the care it gave to the child entrusted to it. In this way special abilities in the families will be developed and conserved for children.

Supervision of children placed in foster homes should include adequate visits by properly qualified and well-trained visitors and constant watchfulness over the child's health, education and moral and spiritual development. Supervision of children in boarding homes should also involve the careful training of the foster parents in their task. Supervision is not a substitute for the responsibilities which properly rest with the foster family.

7. CARE OF CHILDREN OF ILLEGITIMATE BIRTH.

The child of illegitimate birth represents a very serious condition of neglect, and for this reason special safeguards should be provided for these children.

Save for unusual reasons both parents should be responsible for the child during its minority, and especially should the responsibility of the father be emphasized. Care of the child by its mother during the first nursing months is highly desirable, and no parents of a child of illegitimate birth should be permitted to surrender the child outside of its own family, save with the consent of a properly designated state department or a court of proper jurisdiction. More adequate and humane treatment of such cases in court procedure and otherwise will result in greater willingness to have them considered, which is in line with the protection needed. The whole treatment and care of the unmarried mother and her child should include the best medical supervision and the widest opportunity for education under wholesome, normal conditions in the community.

8. RURAL SOCIAL WORK.

Social work for children in rural parts of the country has been neglected. The essential principles of child welfare work should be applied to rural needs, and agencies for rural service encouraged.

9. RECREATION.

The desire for recreation and amusement is a normal expression of every child and an important avenue for moral education and for the prevention of delinquency. It should be the concern of the state that wholesome play, recreation and amusement be provided by cities and towns and that commercialized recreation be supervised and safeguarded.

10. JUVENILE COURT.

Every location should have available a court organization providing for separate hearings of children's cases, a special method of detention for children, adequate investigation for every case, provision for supervision or probation by trained officers and a system for recording and filing social as well as legal information. In dealing with children the procedure should be under chancery jurisdiction, and juvenile records should not stand as criminal records against the children. Whenever possible such administrative duties as child placing and relief should not be required of the juvenile court, but should be administered by existing agencies provided for that purpose, or in the absence of such agencies, special provision should be made therefor; nor should cases of dependency or destitution in which no questions of improper guardianship or final and conclusive surrender of guardianship is involved, be instituted in juvenile court.

The juvenile victims of sex offenses are without adequate protection against unnecessary publicity and further corruption in our courts. To safeguard them, the jurisdiction of the juvenile court should be extended to deal with adult sex offenders against children, and all safeguards of that court be accorded to their victims.

In all cases of adoption of children, the court should make a full inquiry into all the facts through its own visitor or through some other unbiased agency, before awarding the child's custody.

11. MENTAL HYGIENE AND CARE OF MENTALLY DEFECTIVE CHILDREN.

The value of the first seven years of childhood from the point of health, education and morals and formative habits cannot be overestimated. Throughout childhood attention should be given to the mental hygiene of the child—the care of the instincts, emotions, and general personality of the child, and of environmental conditions. Special attention should be given to the need for training teachers and social workers in mental hygiene principles.

Each state should assume the responsibility for thorough study of the school and general population for the purpose of securing data concerning the extent of feeble-mindedness and subnormality, and should make adequate provision for such mentally defective children as require institutional care, and provide special schools or classes with qualified teachers and adequate equipment for such defective children as may be properly cared for outside of institutions. Custodial care in institutions for feeble-minded children should not be resorted to until after due consideration of the possibility of adjustment within the community.

12. SCIENTIFIC INFORMATION.

There is urgent need of a more adequate body of scientific literature dealing with principles and practice in the children's field of social work, and the meeting of this need is a responsibility resting on those so engaged. Careful interpretation and analysis of methods and results of care and the publishing of these findings must precede the correcting of many present evils in practice. Boards of directors, trustees and managers should particularly consider participation in the preparation of such a body of facts and experience as being a vital part of the work of their staff members.

13. CHILD WELFARE LEGISLATION.

The child welfare legislation of every state requires careful reconsideration as a whole at reasonable intervals in order that necessary revision and co-ordination may be made, and that new provisions may be incorporated in harmony with the best experience of the day. This conference recommends that in states where children's laws have not had careful revision as a whole within recent years, the governor be requested to take the necessary steps for the creation of a child welfare committee or commission. It is also urged that the President of the United States be asked to call a conference during the next year in conjunction with the governors of the various states, to consider the whole question of child welfare legislation.

SOCIETY REPORT

THE NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Stated Meeting, Held October 9, 1919.

MURRAY H. BASS, M.D., *in the Chair.*

CHRONIC ARTHRITIS WITH SUBCUTANEOUS NODULES AND ENLARGEMENT OF LYMPH NODES AND SPLEEN.

DR. MAY WILSON presented this patient, a girl 8 years of age, born in this country, of Austrian-Polish extraction, with a tuberculous family history and giving herself a positive von Pirquet reaction. She gave a personal rheumatic history, developed an arthritis of the right knee joint at the age of 5½ years, followed by repeated involvement of joints in the following order: knees, wrists, spine, ankles, carpus, phalanges, periarticular thickening, stiffness, no redness, and little pain in the joints. Associated with the arthritis is enlargement of the lymph glands, the course of their enlargement following closely that of the joints. There was early and persistent enlargement of the liver and later enlargement of the spleen. During the past 6 months subcutaneous rheumatic nodules have developed along tendons and bony prominences. While under observation there had been some enlargement of the heart, a carditis with possibly pericarditis. The onset of the condition was acute. Its duration was 2½ years. No focus of infection had been found.

The problem in differential diagnosis which the case presented was whether this was a case of intractable rheumatism, characterized by swelling of the joints of a subacute nature, fibrous nodules near the joints, with lymphatic gland involvement and a rheumatic history. Such a form of rheumatism was rare in this country. Or, was it an early case of Still's disease (infectious arthritis) since in addition to the arthritis the glands and spleen were involved? Again might it be a case of tuberculous rheumatism as described by Poncet, who described a similar case in which there was a tuberculous family history and a positive von Pirquet. Finally, could it be a case of arthritis deformans occurring in childhood?

The blood culture was negative during exacerbations. The urine showed albumen 1-2 plus. An x-ray of the heart showed a slight hypertrophy of the right ventricle. There was no evidence of bone or cartilage destruction.

Discussion—DR. OSCAR M. SCHLOSS said he had had the opportunity of seeing the case and probably the diagnosis was sub-acute rheumatism with tremendous development of rheumatic nodules.

As to the question of Still's disease, some of these cases described by Still are very slow in developing and have recurrent attacks and intervals of remission such as this child's history shows. However, the evidence at the present time was in favor of this being a rheumatic case with fibrous rheumatic nodules.

DR. HERMAN SCHWARZ said he was greatly interested. Rheumatic fever seemed to be more common in the last half year than for some years previously. He agreed with Brennemann that where the child had a bad rheumatism, with or without cardiac involvment, rheumatic nodules were found. At the present time there are in the wards of Mt. Sinai Hospital 3 cases of rheumatic fever with heart involvment showing rheumatic nodules. One of these was excised but evidently was too long in existence to show the Aschoff bodies. The case shown is most likely one of sub-acute rheumatism, and he would suggest that as soon as one of the nodules appeared, it be excised and examined and an absolute diagnosis of rheumatism made.

DR. GODFREY R. PISEK said that the very fact that the question came up as to whether this was a case of rheumatism or Still's disease made it necessary to view it from the differential standpoint. This child fell in with the description given by Still, but even if the case were accepted as Still's disease, we would be just as far away from knowing the etiology as though we called the case one of chronic rheumatism. The fact that the child had had various arthritides, the character of the temperature chart and the splenic enlargement made him feel that it could be put under the classification designated as Still's disease.

DR. HENRY W. BERG said that these cases of Still's disease seemed to be much more numerous formerly than at the present time, and he wondered whether there were really fewer cases or whether it was because he did not see as many dispensary cases as he saw some years ago. He did not remember having seen a case of Still's disease in a child for some years. The fact that the nodules in this case resembled those of arthritis, that the joints were stiff, that enlargements had not occurred unless there was fever, that there were recurrences, and that there is enlargement of the liver, spleen, and lymph nodes and tuberculous history would make one think immediately of Still's disease. Though we knew very little about the pathogenesis of Still's disease, it was certain that the symptoms presented in this case come very close to the picture of Still's disease.

Dr. L. E. LaFétra said that the unusual feature in this case was the enlargement of the lymph nodes; otherwise it would be easy to classify the case as one of subacute rheumatism. Among hundreds of cases of rheumatic arthritis it was rare to find a case with enlargement of the lymph nodes. It was quite possible that this child, as suggested by Dr. Schloss, was on the way to develop Still's disease.

Dr. Sidney V. Haas said that not so very long ago the finding of these fibrous nodules was considered as indicating a bad prognosis. This opinion has undergone a change. This case would seem to substantiate this attitude, for although the child was rather sick the prognosis for an early death did not exist.

The case illustrates very well the confusion which existed in the matter of rheumatism. Still's disease was in reality only a chronic sepsis. This child, Dr. Haas said, represented the clinical picture of 3 diseases: (1) lymph-adenitis, (2) rheumatism, (3) Still's disease, due to one etiologic factor—chronic sepsis.

Dr. Roger H. Dennett said he thought Dr. Haas had described the situation exactly. It was not so much whether the case was one of fibrous rheumatism, whether it corresponded to Still's disease, or whether it was a tuberculous rheumatism, though he considered that a very odd name. The fact of importance was that it was a chronic infection. It might be from the middle ear, a sinus, the teeth, or what not. He felt that on this point the future textbooks would be simplified, not being satisfied by describing various pictures of each type of infection and giving them a name, but would say "this is one of the many manifestations of blood infection coming from focal infection."

Dr. Wilson, in closing, said that they were expecting to have an examination of a nodule, but they were waiting until they could get a fresh one, as Poynton and Paine in "Researches of Rheumatism" state that fresh nodules show the characteristic morphology and can be stained for organisms. Dr. Koplik (Archives of Pediatrics, September, 1910) and Poynton and Payne in "Researches of Rheumatism" cite similar cases. Poynton said he could not classify it, but thought it took a middle position between chronic rheumatic arthritis and Still's disease. The teeth and sinuses had been examined and found negative.

HYPERPIGMENTED AS CONTRADISTINGUISKED FROM HEMORRHAGIC MEASLES.

Dr. Henry W. Berg read this paper (see page 619).

Dr. E. M. Giddings said that speaking of hyperpigmented measles which had been described as a benign type, he had observed some 2,000 cases of measles and found among them 60 cases of hemorrhagic measles and one case only of hemorrhagic measles in the sense of being malignant, with hemorrhage from the various mucous membranes. Among these cases were 17 cases of bronchopneumonia, and of these 9 died. Of the 9 cases dying, one was complicated with laryngeal diphtheria, 2 with straight diphtheria, one with scarlet fever and one with enterocolitis. Twenty-four cases had otitis media, which was a little more than the average incidence of this complication among measles cases.

The course of the disease, when of the hyperpigmented type, is usually milder as to complications than that of ordinary measles. Of the 17 cases of bronchopneumonia, 12 developed within 3 days after admission; 2 had bronchopneumonia on admission, and the remaining cases developed the pneumonia later in the course of their illness. The temperature curve is as Dr. Berg has described it. The fever usually lasts 3 or 4 days longer than in the ordinary type of measles and then comes down by lysis, usually on the seventh or eighth day.

Dr. L. E. LaFétra said all were familiar with this type of benign hemorrhagic measles, and the thing that struck one when he first saw such cases was the surprisingly good outcome as compared with that of true hemorrhagic or malignant measles.

With reference to designating this type of measles by the term "hyperpigmented," Dr. Berg had criticized his own caption when he said that the word "hyperpigmented" described only the latter part of the disease. Why then give the disease that name when we want to know something about the disease when we make the diagnosis. Dr. Berg had used the term hyperpigmented to mean bright red and also to mean dark brown. Would not the use of some term such as benign hemorrhagic or mild hemorrhagic be better?

Dr. Herman Schwarz expressed the opinion that it is not necessary to name the various types of measles except as to their being malignant or non-malignant, with or without hemorrhages.

Dr. Murray H. Bass said there was one point that had interested him particularly, and that was that these cases of hyperpigmented measles should be differentiated from the ordinary ones on account of the fact that the complications ran a more favorable course than in the other type. He had not known that before. It had seemed to him that the difference was due to a difference in the skin of the patient and to the fact that the blood capillaries of such patients broke easier than others; or he had thought that hemorrhagic measles might be complicated with some other condition which rendered the skin capillaries of the patient particularly susceptible, so they broke easily. The fact that these cases ran a longer course might be due to the absorption of the extravasated blood. If, however, these cases of hyperpigmented measles ran a milder course as regards complications, it was perfectly proper to think that we were dealing with a different type of measles.

Dr. Berg, in closing, said he was glad to see that Dr. Giddings brought out the point that there were a large number of cases of hyperpigmented measles. However, the cases were not *simple* hyperpigmented measles, if the patients died. He had given the reasons for this statement in his paper. The important points in reference to hyperpigmented measles were the longer course of the disease, the fact that the patients did not have severe constitutional symptoms, and that they had hemorrhagic essential measles lesions. These cases had been called hemorrhagic measles, but they were not hemorrhagic measles. Hemorrhagic measles was a fatal disease, so that from the prognostic standpoint one should not make a diagnosis of hemorrhagic measles when the case was one of hyperpigmented measles.

The term pseudo-hemorrhagic would not do, because that would mean that the hemorrhage was not a true hemorrhage; it was not a hemorrhage in the sense of causing petechial spots, vomiting blood, nasal bleeding, hematuria, and toxic cerebral symptoms, but it was a true hemorrhage as regards the eruption itself. That is to say, it was hemorrhagic so far as the lesion itself was concerned and one would not find other hemorrhagic spots or petechiae; compressing the lesion did not cause these measles spots to disappear or fade. If we found no other hemorrhages, except the hemorrhagic measles lesion, we labelled the condition hyperpigmented measles, and were at liberty to make a perfectly good prognosis in the non-complicated cases. There were 2 kinds of true hemorrhagic measles, the foudroyant in which the patients died promptly, and a type in which there were severe complications with true hemorrhagic measles and the patient died after 2 or 3 weeks. The hyperpigmented type was an absolute entity and one could make the diagnosis on the eruption and on the fact that there were no constitutional symptoms and no toxemia, and the patients never died but invariably got well. Some got complications, but in these there was a better prognosis than in ordinary measles. Even when complicated, hyperpigmented measles has a better prognosis than simple measles when complicated.

The fact that he wished to impress was that these cases must not be classified as hemorrhagic, but must be called by some other name; it did not make any difference whether it was "hyperpigmented" or some other name that came nearer to the truth. If a more appropriate name could be found he was willing to have it adopted. If those members of the section who had charge of large children's contagious disease services would watch their cases of measles for a winter or two they would find a certain number of cases that they could diagnosticate as hyperpigmented and when there was a discussion on the next paper on this subject they would be able to talk about hyperpigmented measles as an absolute entity.

THICK CEREAL FEEDING IN MALNUTRITION IN INFANTS.

Dr. Harold Ruckman Mixsell read this paper (see Archives of Pediatrics, August, 1919, page 449).

Dr. L. E. LaFétra said Dr. Mixsell was to be congratulated on the results of the thick gruel feeding. He felt that these favorable results were in a measure due to the wise use of protein in the form of skimmed milk boiled with the cereal. Many had used the cereals boiled only in water, and while in that way they had been able to prevent vomiting they had lost sight of the protein requirements.

Dr. Jesse F. Sammis asked whether all the cases did as well as the 2 spoken of and whether any case had had edema from the excess of carbohydrate. He had seen one case in which the feeding of high carbohydrate had caused edema and retention of urine. When that child lost his edema he lost most of his gain in weight. For how long a period were all these cases watched and kept under observation?

Dr. Sidney V. Haas said it was interesting to know that one could get good results from thick cereal feeding and it gave a possible explanation of the good results obtained with malt soup. In both of these types of feeding there was a large quantity of carbohydrate.

Dr. Mixsell had called attention to one point which was likely to be lost sight of and that was the character of the colloids. The colloids were a factor of importance and one that was much neglected.

Dr. Herman Schwarz said that if from no other standpoint, it was interesting and instructive that infants of 2, 3 and 4 weeks of age could be fed with thick cereals. It is certainly an additional instrument to our armamentarium in feeding young and older infants.

Dr. Charles Hendee Smith said that it had been known for some time that cereal gruels were a last resort in the feeding of vomiting babies. There were many ways in which these gruels could be made up. As he remembered Dr. Porter's paper, rice flour was used, and as rice flour did not thicken as much as some other cereals it was necessary to use 12 or 14 tablespoonfuls to make up 30 ounces. It was the speaker's practice to use cream of wheat which only took 5 level tablespoonfuls to make 30 ounces, which was practically the same proportion as Dr. Mixsell's mixture, 1 tablespoonful to 6 ounces. Dr. Smith said he ordered the cereal cooked in a pint or less of water for 1 hour and then the milk in any amount necessary to be added and brought to a boil or not, as desired. The result was a solid cereal when cool. In this method whole or skimmed milk might be used and any form of sugar might be added. The results with vomiting babies were regularly excellent. Dr. Mixsell's paper suggested valuable extension of thick cereal feeding to other difficult feeding cases.

DR. HENRY W. BERG said that he was impressed by the unimportance of the disturbances that might be caused by cereal feeding, but he felt that the results of feeding with atropin might be very important. He felt that the feeding of food should be separated from the feeding of drugs, so that one would know just what the child was absorbing. It had occurred to him while listening to Dr. Mixsell that if it became a habit to feed atropin in the food of sick infants there might be a higher death rate notwithstanding perfect feeding. In this food Dr. Mixsell gave all the chemical elements that the child needed and he obtained good results. The feeding of thick, almost gelatinous food, prevented the slight tendency to vomit mechanically, and the child would retain such food, while fluids would be vomited. He also wondered, as had one of the other speakers, how many other children would have done as well as the cases cited. He had sometimes noticed that the more scientific the feeding was, the worse the child did. He had known instances in which all kinds of scientific methods had been employed and failed and then someone would induce the mother to try a patent food and the child would do well. There were a great many things we did not know about the patient and the way various foods affected various types of patients. He did not want anyone to think that they did not recognize that the method of feeding which Dr. Mixsell had described was suggested only as an additional resort in cases of difficult feeding and that it would do good in some cases and do badly in other types of cases.

DR. MIXSELL, in closing, said that Dr. Berg had expressed his own feelings, namely, that the thick cereal feeding was simply one of the methods of feeding that might be employed in difficult cases. He did not think it was a cure-all by any means, although in his series the babies did uniformly well.

In regard to the possibility of edema, he had had one case in which there was edema, but he had lost sight of it, after going into the army, and was unable to keep it under observation. The hospital cases went out and he was not able to keep them under observation for long. Cases in private practice he had observed for from 6 weeks to a year and they did well.

In using rice one had to use twice as much as of other cereals, using from 10 to 12 tablespoons to a 30 ounce mixture.

Feeding methods have sometimes seemed to run in cycles and this was a modification of the pap feeding used in the sixteenth and seventeenth centuries. It was not a new method, but might be used with advantage in a good many cases, where other foods were not tolerated.

INTESTINAL TOXEMIAS OF INFANCY. A SUGGESTED EXPLANATION. (PRELIMINARY COMMUNICATION).

Dr. Marshall C. Pease read this paper, in which he stated that almost by common consent the symptoms described under the terms intestinal intoxication and toxemia had been ascribed to toxins, though there had been much dispute as to whether such toxins were of bacterial origin, or the product of disordered metabolism, or perhaps even the result of food poisons, especially of the faulty splitting up of the proteids in the gastro-intestinal tract itself. The present paper proposed to offer an explanation for these cases in the toxins which were elaborated by certain anerobic bacteria, many of which had been known for years while others had been described for the first time by various observers during the past 4 years, and they were all remarkable in the fact that their toxins had only recently been proven to exist. The type of cases included under the terms intoxication and toxemia included a considerable variety. In some instances the onset was insidious, following a period of diarrhea and vomiting, with much wasting and loss of tone of the skin, and a delirium or semi-stuporous condition. There were, however, many cases in which the onset was sudden, with vomiting, convulsions and twitching of the muscles and a varying degree of coma. The temperature might be subnormal though more commonly it was moderately high, in some instances as high as 104° to 105° F. during the entire period of illness.

The urine was decreased in amount and frequently contained albumen, casts and acetone. The respiration and pulse were disturbed. In the later stages of the toxemia, the eyes were sunken, the face fell in, there was a leaden color and the patient was in collapse. There seemed to be no reason for not including Finkelstein's "alimentary toxemia" in this series. The condition was aggravated and continued by the ingestion of fats and sugars, a condition which was common to practically all gastrointestinal disturbances of infancy. It might be added that fats and sugars along with a high proteid content formed a media that was peculiarly suitable for the growth of anerobes and consequently, other things being equal, should favor the elaboration of their toxins. The fundamental problem was what were these toxic agents and under what conditions were they elaborated. It was possible now to indicate a source from which such toxins might be derived and to prove that they were capable of causing either mild or the severest possible degree of toxemia. These toxins were derived from a group of anerobes that were commonly found in the gastrointestinal tract not only of adults but of infants. Tables were presented showing these organisms in the order of their pathogenicity and with an indication of their main action as regards the sugars and proteids. Group I, capable of elaborating a high titre toxin, included the vibrion septique, B. edematiens and B. perfringens, all of which had a sacchrolytic action, while the second and third had also a slight proteolytic action. This group also included B. histolyticus, which had a proteolytic action. Group II included organisms having a low titre toxin, as the B. fallax, which had a saccharolytic action, and the B. sporogenes and B. aerofetidus, which had a proteolytic action. Group III included organisms which so far as was known never produced toxins and were chiefly important because of their association. The B. putrificus and B. tertius of this group had a proteolytic action and B. fermentans, a sacchrolytic action. The organisms of the first group showed great variability in their ability to elaborate toxins. The organisms of Group II, with the exception of B. fallax, were all putrefactive organisms and the titre of their toxins was invariably low. All of these organisms had a common source, being found in the upper layers of garden soil, in dust and putrid material. They were only produced in high titre and in quantities in a media rich in proteid and having an alkaline reaction. The putrefactive organisms derived their importance chiefly from the fact that they tended to keep the media of an alkaline reaction and break down the proteids into their simpler compounds which might be more easily attacked by the pathogenic sacchrolytic organisms. A sufficiently acid reaction would not only inhibit the growth of the pathogenic anerobes but would also rapidly lower the titre of their toxins. An anerobic infection with a single organism was a rare event. In a recent report, which dealt largely with the putrefactive flora of the intestines, the statement was made that "when the gas in this tube (lactose peptone bile) exceeds 60 per cent we can be sure that B. Welchii predominates in the stool." That conclusion was entirely false, as the B. Welchii would overgrow any other organism in a culture tube, and the putrefactive organisms, if they grew at all, tended to disappear at a later time. As a matter of fact the literature having to do with the anerobes of the intestinal tract was nearly valueless. The B. Welchii, the B. sporogenes and the B. putrificus had been frequently found and they were easily grown and recognized. These produced a highly potent toxin and were regularly found in the stools of infants. With 2 unimportant exceptions, the pathogenic anerobes were fermenters of sugar, breaking down carbohydrates and forming both lactic and butyric acids in considerable quantities. At best they were feebly proteolytic, causing none or only slight putridity. When these toxins were absorbed into the general circulation the pathological changes in the parenchymatous organs were of the general nature of a cloudy swelling and a fatty degeneration or necrosis.

The symptoms developed by these toxins were dependent not alone upon the kind and titre of the toxin but also to a measurable degree upon the size of the dose, that is, the number of organisms, conditions that favored the elaboration of a toxin, and the rapidity of the absorption.

A high protein feeding with a putrefactive type of stool having an alkaline reaction favored the production of toxins. A preceding diarrhea should be of active assistance in absorption in so far as it lowered the power of the lining epithelium to hold back deleterious substances. As these anerobes did not grow on living tissue there would be no inflammatory reaction in the walls of the intestines and in fact no changes except those due to the presence of toxin, which would be in the nature of a cloudy swelling or degeneration and which might appear at autopsy in those cases that recovered from the toxemia as an atrophy. The onset and severity of the toxemia were dependent upon several factors: 1. the degree of absorption; 2. the toxin itself, in as much as there was a great dissimilarity between these toxins and their antitoxins and a great variation in the associated anerobes.

The present day treatment of toxemia of intestinal origin was in the nature of a confirmation of these toxins. First, the clearing out of the intestinal tract not only removed many of the pathogenic anerobes but also a considerable amount of toxin that was available for absorption. Secondly, the forcing of fluids increased the elimination and in this manner tended to decrease the amount of toxin in the general circulation. Third, the carbohydrate diet was one in which the pathogenic organisms grew freely with the production of acids through which their own growth was finally inhibited. Of even more importance was the fact that a media containing sugar and having an acid reaction was not favorable for the production of a high titre toxin.

In discussing the possibility of producing an antitoxin Dr. Pease said that all that could be claimed at the present time was that the intestinal tract habitually contained a number of anerobes that produced toxins against which it was possible to produce antitoxins.

Discussion—Dr. Godfrey R. Pisek said that he was very much interested and instructed by the paper and that they were very fortunate in that Dr. Pease, while engaged in army work in France with the gas bacillus, had thought of this subject from the pediatric standpoint and applied the principles and findings to infants and children. He had re-opened a poorly trodden field. How unsatisfactory had been any subject matter dealing with the intestinal flora was shown in a study of the literature. If the doctor could offer a good explanation of these bacterial activities with their elaborated toxins, whether along etiological lines or along the lines of treatment, his work would be worth while. What he had told them to-night certainly offered an explanation of certain disturbances caused by high protein feeding. If high proteins were fed there might occur alkaline putrefactive stools with production of powerful toxins and in making a diagnosis one should have that fact in mind. He also explained why high acidity occurred with high carbohydrate feeding. If now they could come to some practical means of deciding when they should adhere to carbohydrates in feeding these cases and when to emphasize the protein they would have gained a great deal. A fact that struck one who did autopsies on children dying of intestinal toxemia, so-called, was that only fatty infiltration was found in the organs and nothing gross or microscopical was to be seen to explain the cause of disorders and production of death. If Dr. Pease had done nothing more than to stimulate research along the lines of intestinal flora and their toxin production, he had done his share. The role of the anerobes in this regard should certainly prove illuminating.

Dr. Roger H. Dennett said he had enjoyed the paper but Dr. Pisek had said the things he would have said. It was undoubtedly a new field of work. Every one who saw a great deal of diarrhea felt that he needed some help in differentiating the various types of intestinal infections. This was pioneer work and he felt that it would do a great deal of good if they would follow it out.

Dr. Oscar M. Schloss said that in these cases of intestinal intoxication in infants there was a diminished volume flow of blood due to the great loss of fluid through watery stools, and in some cases there were pronounced circulatory symptoms, where the blood was sufficient in itself, to be regarded as symptoms of acidosis due to diminished secretion of urine, the result of suboxidation. If there was diminished oxidation it diminished the volume flow of blood and a marked acidosis occurred. The treatment was to give water, intravenously, subcutaneously, or intraperitoneally in order to bring the blood volume to normal. A 10, 15 or 20 per cent sugar solution might be given. A saline solution should be given first and this should be followed by a dextrin solution. Dr. Marriott had used gum acacia solution with excellent results.

A point brought out by Dr. Pease which was very suggestive, was whether the toxin formed in the intestinal tract was the cause of symptoms or whether it was the loss of water that produced the symptoms. The first symptoms might be due to water loss entirely; the baby refused food and vomited and lost water through the intestinal tract, and this was the cause of the diminished blood volume and diminished blood flow. On the other hand, it was possible that the toxins were responsible for both the diarrhea and these symptoms. This was the question which should be definitely answered.

Dr. Herman Schwarz said that Dr. Pease's paper was extremely interesting, for some 10 or 12 years ago Dr. Schwarz thought he could divide the bacteria that caused some diarrheas into (1) the proteolytic, spore-bearing, gelatine liquefying bacteria, often anerobic, and (2) those which were of the ordinary pathogenic variety. In the course of the work he found more exceptions than cases which followed the rule, so that he finally gave it up. Anerobic culture methods were not so well developed so that perhaps we may get a little further to-day. It would have to be first definitely proven that the toxins produced by the anerobic bacteria actually are produced in the body and cause these symptoms. It brings us down again to the old discussion whether the poisons that cause these conditions are secondary to bacterial activity or just pure chemical processes.

Dr. Pease, in closing, said that of course he did not present these things as something actually proven, but had presented a series of organisms which did form toxins and were capable of producing a general toxemia which was exactly as he had pictured it. Dr. Schloss in his statement had brought out the whole mechanism of these cases. If one took, for instance, acidosis, the symptoms were brought about by the mechanism described, but why the acidosis and why the disturbance in circulation? Many cases of toxemia did not have diarrhea. Dr. Pease said he had seen a case the day before which was a most beautiful case of acidosis and great toxemia and there had been no vomiting and no diarrhea in the course of the illness and the child had not lost fluid. It probably weighed as much as before it became sick, so that he did not think it could be claimed that a large number of those cases developed their symptoms through loss of fluid or loss of serum. The cause, he was sure, was in the nature of a toxin, and these toxins were perfectly able to duplicate every symptom that a case of toxemia showed. The first explanation of gas gangrene that was offered by Sir Almroth Wright was that it was an acidosis. The first work done in 1914 showed how closely parallel these cases were to those we had looked upon as purely cases of acidosis. The men who undertook to work out these organisms did not enter upon an easy road. He knew of nothing so difficult as the isolation of these organisms in pure culture. There might be 6 or 7 anerobes that started as a mixed culture and then the problem presented enormous difficulties. For instance, one might take a culture of the B. edematiens and run it through 8 or 9 cultures, always getting this organism, and then the B. fermentans might appear. This was because these were spore bearing organisms and the spores had been carried along through the previous cultures. The only way to separate the organisms was by repeated animal inoculation.

DERMOID CYSTS (Jour. A. M. A., Oct. 4, 1919). It is only rarely, says W. C. Quinby, that dermoid cysts are brought to the attention of the neurologist. They may, however, give rise to marked disturbance and involvement of the urinary tract, and to illustrate this he reports three cases: one of dermoid cyst of the vesicovaginal septum causing chronic bleeding ulcer of the bladder. In this case the diagnosis was not made before operation. The second case was one of dermoid cyst of the ovary filling the true pelvis and communicating with the walls of the bladder, thus causing severe cystitis. Two operations were required, but the result was fatal. The third case was one of dermoid cyst causing renal colic, reported by Fagge. It is important, Quinby thinks, that a knowledge of such conditions of dermoid cysts should be possessed by the neurologists.—*Journal A. M. A.*

DEPARTMENT OF ABSTRACTS

KOECHERT, HERBERT L.: FETAL BRONCHIECTASIS. (American Journal of Diseases of Children, February, 1919, p. 95.)

The author in his article summarizes as follows:—

1. The cause of fetal bronchiectasis is unknown, although the opinion of a primary maldevelopment seems to be current among most modern investigators.

2. The bronchial origin can be said to be proved.

3. The composition of the cyst fluid found in this case strongly suggests the possibility of its being liquor amnii.

4. In the case he reports, there occurred a slight dilatation of the right lung, probably due to increased respiratory effort, that the myocardial hypertrophy was due to increased resistance to the pulmonary circulation; that the dyspnea was due to increased carbon dioxid tension of the blood, and that the cyanosis could be explained by any or all of three factors—the prevention of oxidation of the blood by the atelectatic state of the lung, the circulation of unrespired blood, due to increased resistance to the pulmonary circulation and the patent ductus arteriosus, and the obstruction to the ingress of air by the pressure of the cyst on the large bronchi or by the developmental bronchial stenosis. C. A. LANG.

THE PREVENTION OF SCURVY. (Medical Record Editorial, June 28, 1919, p. 1101.)

After a thorough investigation made at the Lister Institute, London, on the subject of scurvy, the Food Committee of the British Royal Society a short time ago issued the following conclusion: 1. Scurvy, like beriberi, is a "deficiency disease," and is due to the continued consumption of food lacking in an accessory food substance or vitamine. 2. This vitamine is contained in a number of fresh foods, in largest amounts in oranges, lemons, and fresh green vegetables, in considerable amounts in roots and tubers such as turnips, potatoes, etc. It is deficient in all dried and preserved foods. 3. It is destroyed by prolonged heating. Alkalies rapidly destroy anti-scorbutic properties. Soda should not therefore be added to water in which vegetables are soaked or boiled. 4. Before the onset of the definite symptoms of scurvy, there is a period of debility and weakened resistance to disease. 5. West Indian lime juice, as ordinarily prepared, is useless, Fresh limes have an anti-scorbutic value but their efficiency is only about one-fourth that of lemons. Orange juice is as effective as lemon juice. 6. Potatoes and root vegetables have a distinct value, but much less than green vegetables and fresh fruit juices. 7. Pulses—beans, peas, lentils—in the dried condition, have no anti-scorbutic properties. If however, the dried seeds are soaked in water and allowed to germinate for a short period, they develop the anti-scorbutic vitamine. 8. The anti-scorbutic value of fresh meat is very low in comparison with fresh vegetables and fruits. Tinned and preserved meats possess no such value. Frozen meat, while more valuable than preserved meat, must be considered inferior to freshly killed meat. 9. The destruction of anti-scorbutic properties of foods during the process of cooking depends upon the time of cooking and the temperature employed. All foods, especially vegetables, should be cooked in as short a time as possible, at boiling point.

HUGH CHAPLIN.

DUPUY, HOMER: ACUTE MASTOID ANTRUM INFECTION IN INFANTS. (New Orleans Medical and Surgical Journal, September, 1919, p. 120.)

Up to the age of 1 year there is no mastoid process. This only develops, with its cell structure, after the first year, reaching the adult type at the third year. But from birth the antrum is present and is often the site of infection in cases of acute otitis media. The author briefly summarizes 6 cases which showed the salient features of antrum involvement. Pain, though present almost always, is not so apt to be severe as in cases of acute otitis media at the onset. There is rather a fretfulness and general irritability. Post-aural swelling, though generally present, is often delayed so much that one should not wait for its appearance before operating. Persistent otorrhea, usually profuse, septic temperature, and leucocytosis make operation imperative.

HUGH CHAPLIN.

GRIFFITH, J. P. CROZER: ACIDOSIS IN CHILDREN. (Therapeutic Gazette, July 15, 1919, p. 461.)

Acidosis is defined by the author as that condition in which acid substances are present in the blood in quantity relatively so increased that the normal excess of alkali is much diminished. In man it depends upon a relative excess of organic acids produced in the human economy. The acidosis may in some cases be accompanied by the presence in the urine of the acetone bodies. The relative excess of acid in the blood depends either upon an overproduction of acid bodies; on a loss of bases from the organism, or on a failure of the kidneys and the lungs to excrete the acid in sufficient amount. At once a sharp distinction must be drawn between acetonuria and acidosis. The amount of acetone bodies may be increased under certain pathological conditions, such as starvation, acute febrile diseases, severe diarrhea, diabetes, intestinal auto-intoxication, and recurrent vomiting. Acidosis is accompanied by a decrease of the carbonic dioxide tension of the alveolar air, an increase in the hydrogen-ion concentration of the blood, and a great lessening of the reserve of alkali in the blood. Children are especially prone to develop the symptoms of acidosis. This may be due to the smaller reserve of alkali which is characteristic of early life, or upon the facility with which children manufacture acid bodies.

A prominent cause of acidosis, especially in infancy, is severe diarrhea, in which there is a large loss of liquid from the intestine, for there is undoubtedly a very large loss of the body's alkali in the diarrheal discharge. There is also a certain class of cases which develop acidosis without any discoverable reason. Nephritis and pneumonia also occasionally are said to have caused acidosis. Although restlessness, sleeplessness and excitement belong to the early symptomatology of this condition and somnolence, prostration and coma develop later, hyperpnea is the only positive symptom of acidosis. Acidosis is always serious; once well developed the prognosis is bad.

The treatment is chiefly preventive, i.e., whenever any condition is present, in which acidosis is known to be liable to develop, measures should be taken to guard against its appearance. Thus, in diarrheas large loss of alkali in the frequent watery stools should be checked by astringents and opium. Free administration of sodium bicarbonate should be the rule so that the urine is kept alkaline. From the viewpoint of prevention, which is the most hopeful viewpoint we have, it is unfortunate that we have so little to guide us in anticipating the condition.

HUGH CHAPLIN.

PRITCHARD, ERIC: THE CONNECTION BETWEEN FOOD AND DISEASE IN INFANTS. (The Practitioner, August, 1919, p. 131.)

The author states at the beginning of his article that he does not wish it thought that the only connection between diet and disease is that which is concerned with what are usually described as nutritional disorders in the narrower sense. Resistance to infective disease is a function of metabolism, and mainly of nitrogenous metabolism. Carbohydrate, or sugar, fed infants are for this reason peculiarly susceptible to infectious disease and show feeble resistance.

Generalizing on the common errors of feeding infants, the writer states that the present importance given to the so-called "deficiency diseases" should not make us forget the still more common class of "excess diseases." The great majority of the diet diseases of infants are due to excess in the total quantity of food, irrespective of the precise qualitative make-up. The injuries caused are in the main due either to intestinal toxemias or to incomplete combustion by the process of internal metabolism. The organism bristles with protective mechanism to prevent these serious results of overfeeding, but the calling into play of even the least harmful of them produces results which must be regarded as pathological.

But the writer states that excess or deficiency of any one particular element of food also produces results which are for the most part recognizable. Firstly, excess of carbohydrate may give rise either to an unduly rapid deposit of fat or to fermentation of the food in the bowel with frothy, acid diarrheal stools. If neither of these results occur, glycosuria may result and, as a later accompaniment of prolonged alimentary glycosuria, a production of semi-oxidized acid products and an alteration of the hydrogen-ion concentration of the blood in the direction of acidosis. Secondly, fat excess may cause frequent vomiting and large soap stools. Also, through incomplete oxidation processes, the variety of acidosis may be produced which is evidenced by the production of acetone, diacetic acid and beta-oxybutyric acid. Though more difficult to define, the recognizable results of protein excess are often vomiting, colic, and intestinal decomposition and toxemia, with foul smelling stools. There may also be an excess of uric acid and ammonia in the urine.

In discussing very generally the results of deficiency of the various elements of food, the author states that a deficiency of carbohydrate entails a slow progress in weight; a deficiency of fat may lead to constipation and a deficiency of protein to a want of resistance to infective diseases. He thinks that too little is thought of lecithin as a necessary food element, especially in connection with the development of nervous tissue and red blood cells, and states that the yolk of eggs contains a high percentage of this element. The extractives and salts are also necessary elements to the desirable diet.

In considering the vitamines, the water soluble or anti-scorbutic element he considers most important in infant feeding. Of the fat soluble vitamine, which is present in animal but not vegetable fats, the author states that it nevertheless appears to be derived from fresh vegetable sources so that the amount of it present in milk or butter fat partly depends upon the nature of the food consumed by the animal supplying the milk. Therefore cow's milk in winter may contain less fat soluble vitamine than in the summer.

The author concludes with the following general statement regarding the etiology of rickets: "I believe any form of malnutrition from any dietetic error may be a cause of rickets, but there is no one particular or single cause, though some may be far more common under certain circumstances than others."

HUGH CHAPLIN.

WOLLSTEIN, MARTHA, AND GOLDBLOOM, ALTON: EPIDEMIC INFLUENZA IN INFANTS. (American Journal of Diseases of Children, March, 1919, p. 165.)

From October 1 to December 15, 1918, 36 cases of bronchopneumonia, with influenza, were admitted to the Babies' Hospital, New York; 12 recovered and 24 died, a mortality rate of 66.6 per cent. Of the 24 fatal cases, 18 came to necropsy and form the basis of the authors' study. The age of the patients ranged from 5 weeks to 21 months. Four children were less than 6 months old, 9 were under 1 year and 9 were between 1 and 2 years of age. There were 7 girls and 11 boys. Cultures were made from the sputum before death in 17 of the 18 patients. Bacillus influenza was present 13 times; in overwhelming numbers, once; very numerous in 11; few in 1. Five times the organism was not found in the sputum, probably because of the difficulty of obtaining suitable specimens of culture from the prostrated patients. The other bacteria present were pneumococci, staphylococci, micrococcus catarrhalis and streptococci, in the order of frequency. Only Type IV pneumococcus was found. Eighteen cases came to necropsy. In all, influenza bacillus was cultivated from both lungs in large numbers, but never in pure culture. It was found once in the heart's blood, together with the pneumococcus, and once in pus from an empyema. The only case of meningitis which developed among these children was due to pneumococci, and influenza bacilli were not present in the spinal fluid. The necropsy findings on these 18 cases were very similar. The lungs contained a great variety of lesions in every case; congestion, edema, general bronchitis, scattered pneumonia lesions, differing in age, but involving 2 or more lobes; subpleural hemorrhages and pleural exudate. Capillary hemorrhages in the other viscera were constant. The influenza bacillus was grown from every case, but not alone. This series of pneumonias was far more severe, more extensive and more highly fatal than was any other group of pneumonia cases observed in the hospital over a similar period of time. C. A. LANG.

HESS, ALFRED F. AND MYERS, VICTOR C.: CAROTINEMIA: A NEW CLINICAL PICTURE. (Journal of the A. M. A., December 6, 1919, p. 1743.)

The authors reach the following conclusions: A diet rich in carotin (carrots, spinach, egg yolks, oranges, etc.) will bring about a yellow discoloration of the skin, a condition resembling mild jaundice, except for the involvement of the sclerae. This pigmentation, no doubt, has been frequently overlooked, confused with mild grades of icterus, or attributed to some obscure metabolic disturbance. It cannot be of rare occurrence, as carotin is widely distributed throughout our diet, being a constituent of almost all our vegetable foods. It is a disturbance, therefore, which will occur most readily in those subsisting on a dietary containing a large quantity of vegetables. The discoloration of the skin is accompanied by a similar yellow tingeing of the blood serum and the plasma. The pigment in the blood was identified as carotin. In cases of carotinemia, the urine was colored yellow as well as the serum. When a small quantity of concentrated carotin was ingested, the pigment appeared rapidly in the urine. These observations are of interest in view of the fact that clinicians, as well as physiologists, consider that the urinary pigments are formed solely from bile or its derivations.

HAROLD R. MIXSELL.

HILL, LEWIS WEBB: ACUTE NEPHRITIS IN CHILDHOOD. (Journal of the A. M. A., December 6, 1919, p. 1747.)

This article is a brief exposition of the author's experience with acute nephritis in childhood at the Children's Hospital in Boston.

Etiology: Under this he speaks of its infectious origin and its causation by cold and exposure. Diseases causing acute nephritis in his series are in order of frequency, tonsillitis, unknown etiology, scarlet fever, impetigo contagiosa, otitis media, pneumonia, tonsillectomy, purpura, carious teeth, stomatitis, and cold. He describes 2 types: (1) Acute hemorrhagic nephritis; and (2) Acute exudative nephritis. The first type is characterized by bloody urine containing very few casts. The subjective symptoms are insignificant and uremia has never been seen. The duration was 6 to 12 weeks and the process always cleared up. The second type presents a marked edema with a scanty urinary output, followed by polyuria. When the kidneys begin to recover there are many granular casts and a considerable number of red blood cells. Blood pressure is elevated with occasional headache and convulsions, and the patient may die of uremia.

Treatment: Always regard it is a serious disease. It is of importance to keep patients in bed, well warmed, with proper care of the bowels, and attention to bathing. In cases without edema, the author uses licorice powder as a laxative, and where there is edema, and watery catharsis is desired, epsom salts. Iron is indicated for the progressive anemia. The diet is of great importance. Fat and carbohydrates, not being excreted through the kidney, should be used. Protein should be cut to a minimum and salt restricted in cases either with or without edema. Water should be given freely to dilute and eliminate toxins in the nonedematous cases. For cases with edema, 12 to 20 ounces intake is sufficient. The surgical treatment (Edebohl's operation) was used in 3 of the acute cases. In one it undoubtedly saved the child's life; in another it did not prevent the development of a chronic process, and in the third, a case of subacute hemorrhagic nephritis, it was worthless. During convalescence always keep the child in bed until the urine is free from blood. Albumen is not a contraindication to a certain amount of activity, as it may persist for months. Keep the case under observation for at least a year, and guard against throat and respiratory infections to prevent any acute exacerbation of the process. Incidentally all possible sources of infection, teeth, tonsils, etc., should be removed.

HAROLD R. MIXSELL.

PASTORE, R.: TREATMENT OF CHOREA ACCORDING TO MARINESCU. (La Pediatria, October, 1918.)

The Marinescu treatment of chorea consists of injections in the spinal canal of magnesium sulphate solution. In order to avoid massive doses and the accompanying unpleasant reactions, Pastore has attempted to subdivide the dosage administered. Thus for five days consecutively one injection is given of 25 per cent solution, increasing the amount from 0.10 to 1.50 c.c. Later two or three are given at intervals of four days. In very light cases the first doses are given only every 48 hours. This fractioned treatment has given, in several cases, excellent results.

C. D. MARTINETTI.

CERVONE, V.: TREATMENT OF TYPHOID WITH INJECTIONS OF COLLOIDAL GOLD. (Bulletino Scienze Mediche, July, 1918.)

After describing the manner of treatment by intravenous injections of colloidal gold, Cervone draws attention to the practical advantages of his method. The nine cases treated were all serious, in fact two were exceptionally so and they all recovered in a period of time much shorter than required with other therapeutic measures. Not one of the nine presented a relapse. Many experiments with animals in laboratory have demonstrated that the action of colloidal gold in the system is merely to arouse natural means of defense not yet well defined. A well defined crisis always results, after which the patient rapidly recuperates.

C. D. MARTINETTI.

AARON, CHARLES D.: THE SIGNIFICANCE OF FOCAL INFECTIONS. (The Journal of The Michigan State Medical Society, July, 1919, p. 390.)

Aaron states that the full significance of focal infection is not confined to their place of origin or location, but is found to a far greater extent in the widespread metastases which may be located at great distances, and apparently have no connection with the original focus. When the danger of metastatic development is properly recognized, the systemic disease will prove to be preventable or amenable to proper treatment, and progressive ill health from apparently unexplainable causes may be prevented or cured by the removal of chronic foci anywhere in the body. Any part of the body may harbor a focal infection, such centers being found in cholecystitis, appendicitis, etc., but the main site is in the head, in and about the tonsils, the teeth and the accessory sinuses. The pathologic tonsil is one of the worst offenders, for its crypts, when acutely inflamed may harbor the streptococcus viridans or hemolyticus with their special pathogenicity for the heart valves with resulting development of vegetations and thrombus formations, and also for the articular surfaces producing arthritis and myositis. Billings states that focal infection is the chief etiologic factor in acute rheumatism, chronic deforming arthritis, gonorrheal arthritis, malignant endocarditis, septicemia of various bacterial types and tuberculosis. Osborne, according to the author, emphasizes the importance of focal infections of the teeth and of the harm which may result from pyorrhea alveolaris, and attributes much of the chronic colitis of later life to the latter condition. As a generally acknowledged principle, the writer believes that the cause of a disease must be eradicated or overcome in order that a cure may be effected, and that the study and removal of focal infections as causes of systemic diseases deserves the most serious attention of the profession. To this end a careful search should be made which should include not only the tonsil but the nasal accessory sinuses, and every part of the body. To allow slumbering infection to exist is tantamount to inviting chronic invalidism. The treatment should consist of the complete eradication of all evident and related foci, combined with general systemic measures.

JAMES HOYT KERLEY.

MIALL, HERBERT: THE BEGINNINGS OF STAMMERING IN CHILDHOOD AND YOUTH. (The Child, August, 1919, p. 491.)

In this article Miall lays stress upon the importance of dealing with the beginnings of stammering. In regard to the etiology, stammering, except in a comparatively few cases in which the action of the speech organs is thrown into disorder by shock, is to be viewed as the result of a combination of factors, amongst which may be placed first, a lethargic and slowly developing condition of speech organs, and an actively developed, often precocious, mentality. If the child is sensitive and therefore a good subject for self-suggestion, it certainly will tend to occur. In these cases, the child's mentality outruns its power of forming words, and it becomes conscious of obstacles. Certain words and certain letters suggest difficulty; then what was at first a local difficulty in utterance is magnified in the child's subconsciousness and becomes an obsession, or fear of words, and this fear of words causes a stoppage of the breath as fear invariably does. These things react upon each other and a vicious-circle is formed of which chronic stammering is the result. In after life occasionally some psychic influence for a time takes the attention off the obsession, and if during this time the speech organs have developed and not acquired too many crude habits, occasionally the stammering ceases permanently, which has led some medical men to say "He may grow out of it." These represent a very small proportion. The author believes that all cases of stammering are absolutely curable if the stammerer is willing to take the trouble necessary. To prevent the condition from arising is the main object and this can be done by giving the proper attention to speech drills in children's classes, and as consonants furnish the main difficulty in early speech they should never be separated from the vowels to which they are attached and the child should always be taught to concentrate upon the latter. Words with consonant-commencing syllables should only be read after the speech drill has given functional control of lip and tongue.

JAMES HOYT KERLEY,

COMMUNICATION

AN APPEAL FOR HUMAN EMBRYOLOGICAL MATERIAL.

In 1906 I observed certain malformations of the human shoulder-blade, and in contributions to current literature I have given them the collective name "the scaphoid type of scapula" and pointed out some of its hereditary, clinical and anatomical significance.

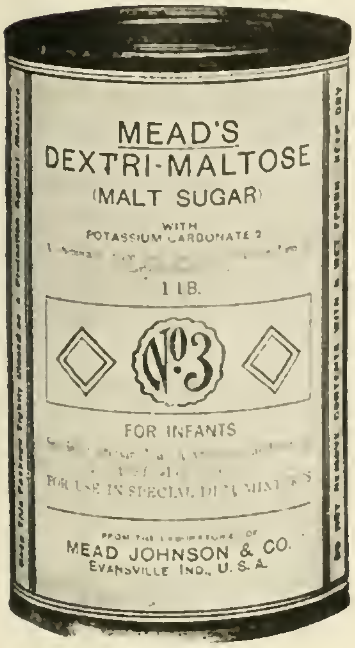
Probably the most important observation connected with this type of scapula in man is its age incidence; that is to say, it occurs with great frequency among the young and with relative infrequency among the old. There appear to be two possible explanations of this fact, either (A) one form of shoulder-blade changes into the other during development and growth, or (B) many of the possessors of the scaphoid type of scapula are the poorly adaptable, the peculiarly vulnerable, the unduly disease susceptible —the inherently weakened of the race.

I have attempted to answer these questions by seeking evidence in various directions, and one of the most important of these has been a study of intrauterine development of shoulder-blades. My investigations in this direction have been limited by the material at my disposal, which has been inadequate for a definite solution of this phase of the problem. I am, therefore, appealing to physicians for fetuses in any and all stages of human development.

It is desired that the material, as soon as possible after delivery, be immersed in 10 per cent formalin in a sealed container, and forwarded to me; charges collect. Due acknowledgement will be made to those forwarding material to me addressed WILLIAM W. GRAVES, M.D., *727 Metropolitan Bldg., St. Louis, Mo.*

The Growing Popularity of Boiled Milk in Infant Feeding

Boiled milk has been shown to be more easily digested by infants than raw milk, and certainly is to be preferred to milk of any but unquestionable quality. That boiled milk feedings correct vomiting and most cases of diarrhœa is a matter of common observation.



COMPOSITION

Maltose	52%
Dextrin	41%
Potassium Carbonate	2%
Moisture	5%

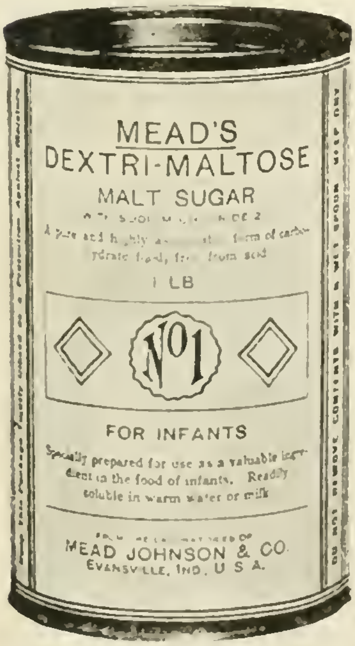
Normal Babies fed on boiled milk dilutions are frequently constipated. For these cases we recommend

MEAD'S DEXTRI-MALTOSE, No. 3

The potassium carbonate present acts as a corrective in constipation and normalizes the infant's stools. As a rule the diet can be so regulated that the administration of cathartics can be avoided.

Babies Having Suffered from Diarrhoea

When plain boiled milk and water (or barley water) feedings have been instituted after the usual period of starvation, as soon as the stools become normal, the addition of carbohydrates to the diet is desirable. We recommend


MEAD'S
DEXTRI-MALTOSE
MALT SUGAR
1 LB
No1
FOR INFANTS
Specially prepared for use as a valuable ingredient in the food of infants. Readily soluble in warm water or milk
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COMPOSITION

Maltose	52%
Dextrin	41%
Sodium Chloride	2%
Moisture	5%

MEAD'S DEXTRI-MALTOSE, No. 1

It can be used with less danger of recurrence of diarrhœa than other forms of sugar. It supplies quickly available energy, which babies in this weakened condition so greatly need. The sodium chloride present, as well as the malt sugar, aids in the retention of water by the tissues, which have been partially dehydrated by the diarrhœa. The weight lost during the period of sickness is usually quickly recovered, and a normal gain may be expected thereafter.

Reprints of late Researches on Boiled Milk, also literature and Samples of Dextri-Maltose, mailed on request

MEAD JOHNSON & CO., Evansville, Ind.

To the Editor:

It is a strange, yet not uncommon, fact that many physicians continue to encourage the use by the public of the old-time bacteria-breeding applications of flaxseed, bread and milk, bran, slippery elm, onions, pork, etc., ad nauseam. These old makeshifts, which probably served a purpose in their day, should no longer be tolerated. At best their good offices were problematical, consisting of nothing more than moist heat of short duration. After two hours the value of such applications is nil. They soon become favorable fields for the propagation of bacteria, and their continued use is productive of harm, as they cause healthy tissue to become inactive and soggy.

It is now almost thirty years since I began using the preparation Antiphlogistine in all cases where a poultice was indicated, and found that it accomplished the desired effect in the shortest possible time. It is clean, pleasant, easy to use, and does not have at any time a deleterious action on the tissues. Another advantage is that I am able to procure this product, or have my patients get it, in an airtight container which warrants its perfect condition, ready for use, whether it is bought in a city pharmacy or in the smallest country drug store. It has been of such great value to me during all these years that I think of it as an old friend, and while I am not acquainted with the manufacturers I am certain that they deserve the thanks of the entire profession for supplying an ideal substitute for the "old-time" poultice. (Signed)

CHAS. G. PURDY, M. D.,
Brooklyn, N. Y.

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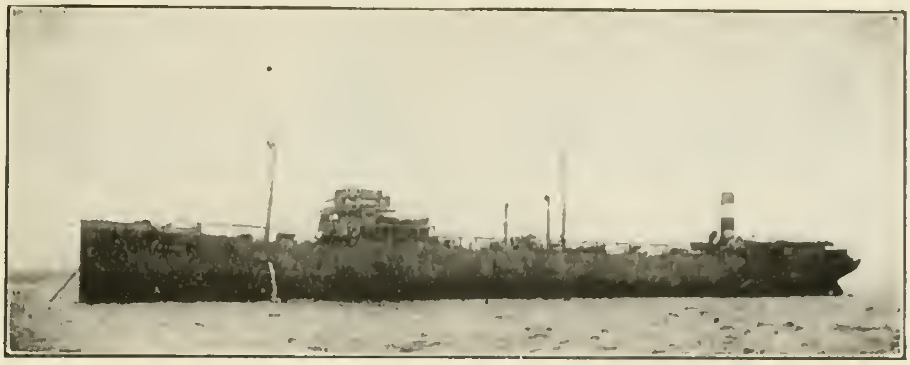

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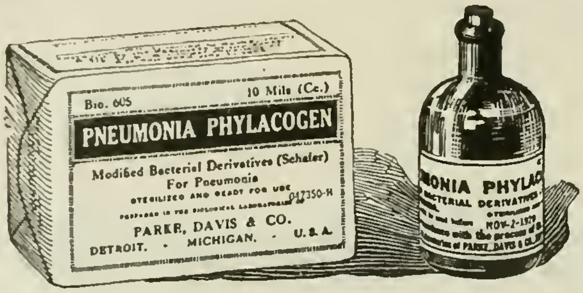

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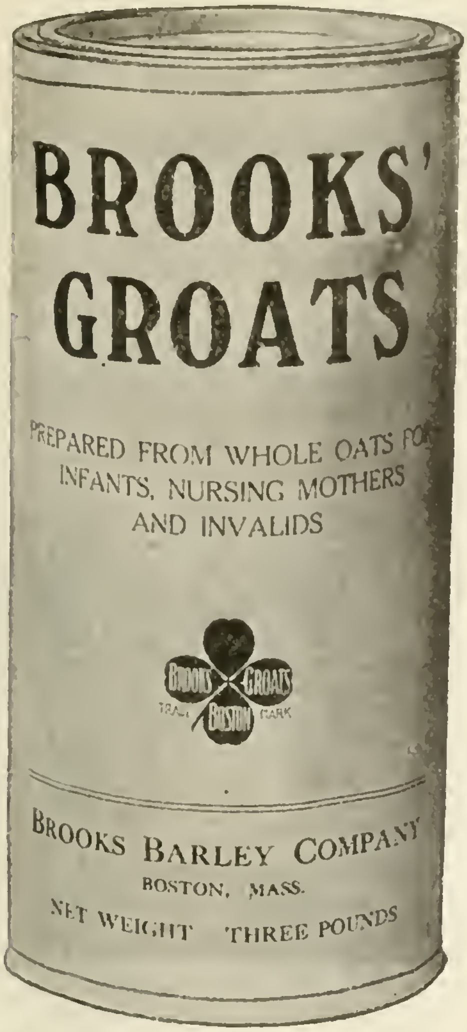
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